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# The Mining Journal,

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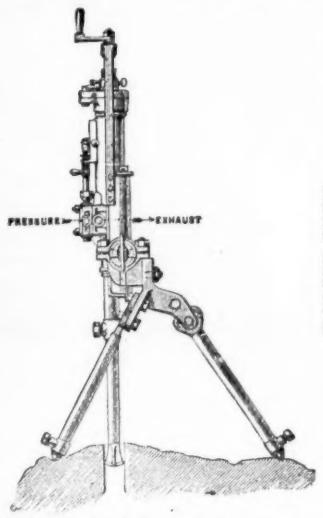


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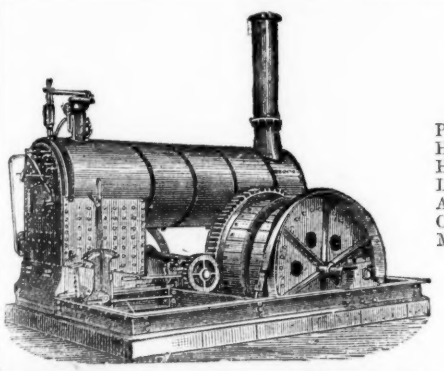

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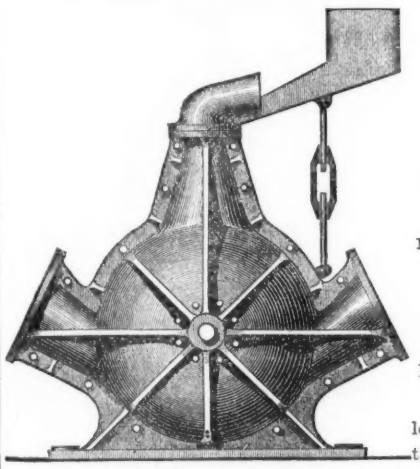

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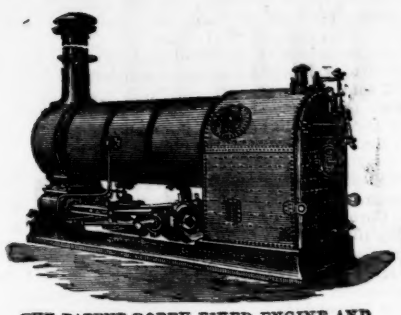

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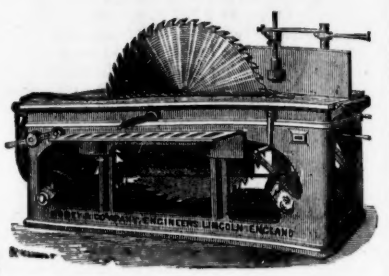

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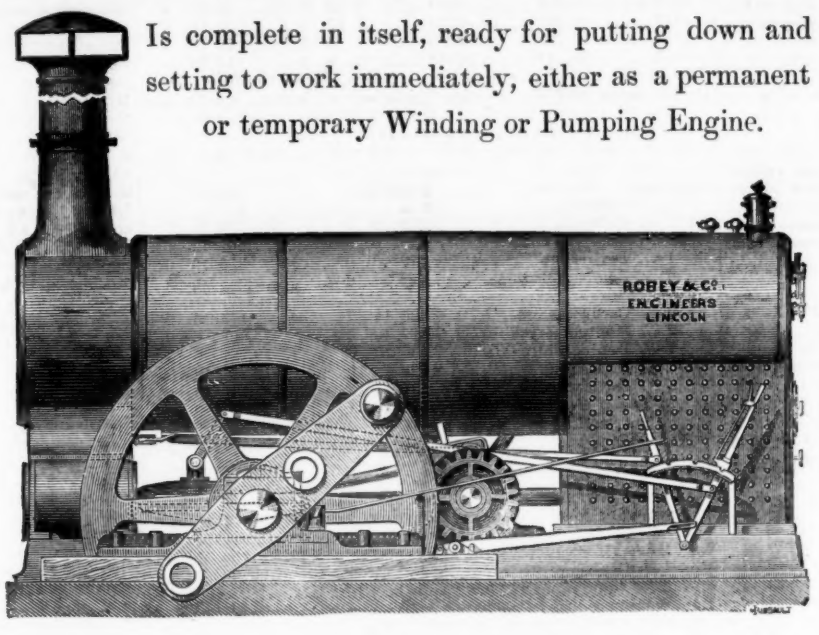


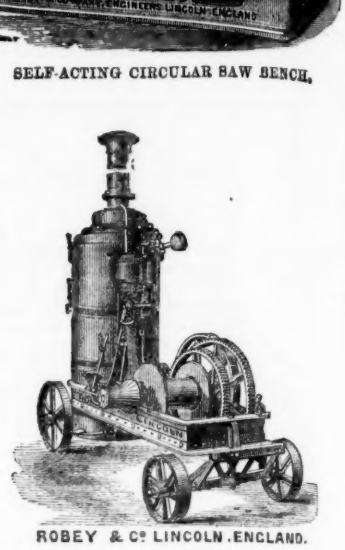

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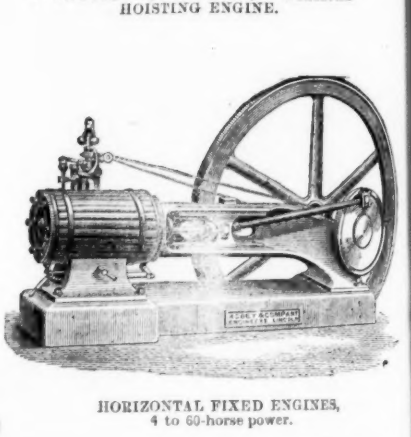

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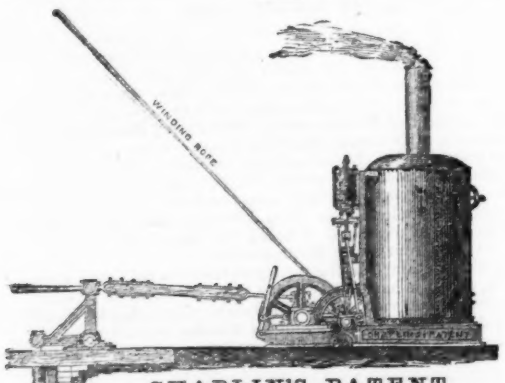


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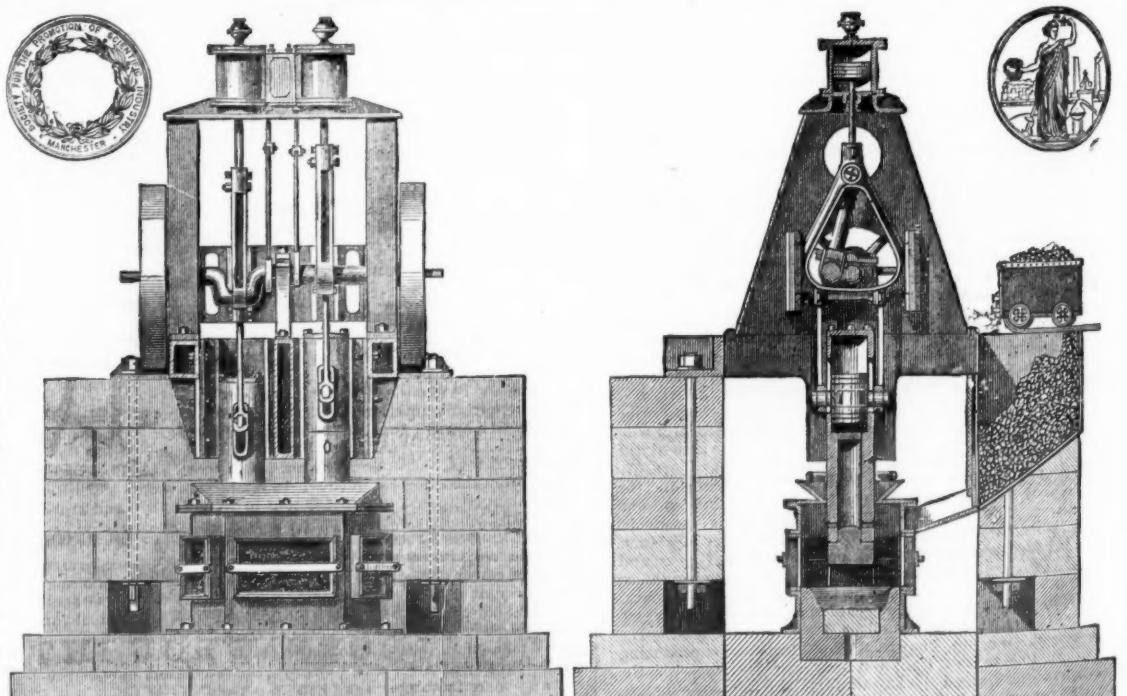

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## MINERAL STATISTICS OF THE UNITED KINGDOM FOR THE YEAR 1879.—No. II.

In the last number of the Journal we entered very fully into the returns of the production of the tin and copper mines of the United Kingdom, as well as recording the general summaries of the yield of our mines and minerals. We now resume with the consideration of the production of lead, zinc, pyrites, and other minerals, following with a comparison of prices of these during recent years.

LEAD ORE, LEAD, AND SILVER.—There were 316 mines in operation in 1879 selling lead ore, which amounted to 66,877 tons, of the value of 688,740*l*. The lead obtained from these ores amounted to 51,365 tons, of the value of 765,489*l*., while of silver there was obtained 333,674 ozs., of the value of 70,905*l*. The annexed summary gives the quantities and values in each year—1879 and 1878—for comparison:—

| | 1879. Quantities. | 1879. Value. | 1878. Quantities. | 1878. Value. |
|---|---|---|---|---|
| Lead ore | Tons 66,877 | £ 688,740 | Tons 77,350 | £ 801,428 |
| Lead | 51,635 | 765,489 | 58,020 | 978,491 |
| Silver | Ozs. 333,674 | 70,905 | Ozs. 397,471 | 88,297 |

Comparing the returns for 1879 with those of the previous year, a falling off appears amounting to between 14 and 15 per cent. of lead ore, while as regards the silver obtained from the lead an increase is shown in 1879 over 1878 of 63,797 ozs. For many years the price of lead ore has exhibited a general decline, in 1876 the average price was 15*l*. 8s. per ton; in 1877 it fell to 13*l*. 19s. per ton; and again, in 1878, it receded to 10*l*. 11s. 6d. per ton; while in the past year the average price was but 10*l*. 6s. per ton. The highest and lowest prices of lead ore were as follows in each of the three years ending 1879:—

| Prices. | 1879. | 1876. | 1877. |
|---|---|---|---|
| Highest | £ 12 6 6 | £ 14 3 0 | £ 16 9 9 |
| Lowest | 9 3 0 | 9 3 6 | 12 7 2 |
| Average | 10 6 0 | 10 11 6 | 13 19 0 |

Metallic lead, like the ore in recent years, exhibits a great depreciation in value. Thus in 1876 metallic lead had an average market value of 21*l*. 13s. 10d., receding to 20*l*. 11s. 3d. in 1877, and 16*l*. 4s. in 1878, while in 1879 the average quotation of English common pig did not exceed 14*l*. 16s. 6d. per ton. The highest and lowest prices of the several forms of metallic lead are quoted as follows in each of the three years ending 1879:—

| Description of lead. | 1879. | 1878. | 1877. |
|---|---|---|---|
| English pig, common | £ 14 16 6 | £ 16 4 0 | £ 20 11 3 |
| English pig (W B.) | 14 11 3 | 17 11 3 | 21 7 0 |
| Sheet and bar | 15 14 6 | 17 16 3 | 21 13 9 |
| Patent shot | 18 11 6 | 21 11 0 | 24 10 9 |

Reviewing generally the above prices, and comparing those of the past year with the year 1877 the prices all round may be set down as 25 per cent. less; prices indicating the unfavourable nature of mining operations at the present time. The details of production of the several lead mining districts in the United Kingdom were as follows in the year 1879, showing the ore, lead, and silver obtained therefrom:—

| No. of mines. | Counties. | Lead ore. Tons cwts. | Lead. Tons cwts. | Silver. Ozs. |
|---|---|---|---|---|
| | England— | | | |
| 9 | Cornwall | 725 5 | 544 18 | 9,435 |
| 3 | Devonshire | 129 12 | 97 15 | 1,915 |
| 2 | Somersetshire | 274 3 | 301 18 | — |
| 105 | Derbyshire | 5,439 3 | 4,709 10 | — |
| 10 | Shropshire | 6,297 5 | 4,986 14 | 6,112 |
| 22 | Cumberland | 2,285 13 | 1,718 9 | 12,226 |
| 35 | Durham & Northumblnd. | 14,186 14 | 10,708 2 | 44,552 |
| 3 | Westmoreland | 1,565 5 | 1,106 14 | 15,515 |
| 23 | Yorkshire | 5,132 6 | 3,713 3 | 6,475 |
| | Wales— | | | |
| 30 | Cardiganshire | 5,079 12 | 3,990 6 | 42,770 |
| 11 | Montgomeryshire | 5,488 17 | 4,925 0 | 29,513 |
| 2 | Merionethshire | 25 0 | 18 5 | — |
| 5 | Denbighshire | 2,368 6 | 1,809 10 | 9,039 |
| 2 | Carmarthenshire | 680 9 | 510 15 | 2,028 |
| 1 | Pembrokeshire | 1,064 12 | 798 10 | 6,384 |
| 1 | Radnorshire | 4 17 | 3 15 | — |
| 30 | Flintshire | 4,787 1 | 3,819 13 | 26,338 |
| 12 | Carnarvonshire | 2,009 14 | 1,554 17 | 4,821 |
| 4 | Isle of Man | 4,358 13 | 3,267 0 | 100,476 |
| 4 | Scotland | 3,702 11 | 2,770 15 | 12,075 |
| 2 | Ireland | 1,272 9 | 911 10 | 4,000 |
| 316 | Total—United Kingdom | 66,876 9 | 51,635 10 | 333,674 |

Glancing through the details of production showing the output of individual mines appear the following: In Shropshire the Roman Gravels sold 2343 tons of lead ore, yielding 1860 tons of lead and 3720 ozs. of silver; Snailbeach, 2285 tons of ore, 1767 tons of lead non-argentiferous. The mines of the Governor and Company in Cumberland sold a total of 1433 tons of ore, yielding 1075 tons of lead and 6448 ozs. of silver, or 6 ozs. to the ton. In Yorkshire the Arkengarthdale Mine sold 1623 tons of ore, giving 1217 tons of lead and 1825 ozs. of silver. The Greenside Mine, in Westmoreland, producing 1627 tons of ore, 1078 tons of lead, and 15,515 ozs. of silver, or 14½ ozs., nearly, to the ton. The important mines of Alkandale and Weardale, in Durham and Northumberland, show a great falling off, but 1623 tons of ore, 1218 tons of lead, and 6090 ozs. of silver in 1879, compared with 4267 tons of ore, 3594 tons of lead, and 21,157 ozs. of silver in the previous year. The mines of Langley Barony, in the same northern counties, gave 2661 tons of ore, 2160 tons of lead, and 5402 ozs. of silver; while the Stonecroft Mine yielded 1863 tons of ore, 1481 tons of lead, and 2220 ozs. of silver.

In Wales a few of the mines yielding ore exceeding 1000 tons were as follows: Grogwinion, in Cardiganshire, 1000 tons of ore, 825 tons of lead; the Lisburne Mines should not be omitted, these produced 948 tons of ore, 740 tons of lead, and 8523 ozs. of silver. In Montgomeryshire the Van Mine produced 4300 tons of ore, giving 3975 tons of lead and 25,800 ozs. of silver, the value of the ore amounting to 45,252*l*. In Flintshire the North Hendre Mine produced 2129 tons of ore, 1720 tons of lead, and 12,774 ozs. of silver, the value of the ore being 25,674*l*. The Talargoch Mine gave 895 tons of ore, 670 tons of lead, and 6933 ozs. of silver. Turning to Denbighshire, the Minera Mines sold 2280 tons of ore, yielding 1741 tons of lead and 8809 ozs. of silver. The Isle of Man—Foxdale and Laxey—produced of argentiferous lead ore the former 2766 tons, the latter 1200 tons, yielding of lead 2066 tons and 900 tons, and of silver 55,319 ozs. and 40,500 ozs., the former yielding nearly 18 ozs. of silver to the ton of lead and the latter 45 ozs. to the ton. The Leadhills Mine, of Lanarkshire, sold 1748 tons of ore, producing 1311 tons of lead, from which the smelters obtained 4588 ozs. of silver in refining the lead. The old Wanlock-head Mine, now known as the Queensberry, producing 1420 tons of ore, 1060 tons of lead, and 5800 ozs. of silver. Of the two mines working in Ireland the Luganure, in the County Wicklow, produced 1124 tons of ore, 800 tons of lead, and 4000 ozs. of silver.

The summary of returns for 1879 show that in the make of every 100 tons of lead the average of 129·519 tons of ore were employed; while it further appears that in every 100 tons of ore lead amounting to 77·210 per cent. was obtained; in the previous year the ore yielded 75 per cent. of lead, while of ore 133·316 tons were required for each 100 tons of lead made. In the yield of silver per ton of lead a falling off appears, from 6·8 ozs. in 1878 to 6·4 in 1879. During the past five years the production of lead ore, lead, and silver from the mines of the United Kingdom has been as follows:—

| Year. | Lead ore. | Lead. | Silver. |
|---|---|---|---|
| 1875 | Tons 77,746 | Tons 57,435 | Ozs. 487,358 |
| 1876 | 79,096 | 58,667 | 483,422 |
| 1877 | 80,850 | 61,403 | 497,375 |
| 1878 | 77,350 | 58,020 | 397,471 |
| 1879 | 66,877 | 51,635 | 333,674 |

The returns of the past few years point conclusively to the fact that the ores each year are more skilfully treated and better results obtained. Thus in 1875 the average yield of the lead ore did not exceed between 73 and 74 per cent., while during the past year an average of upwards of 77 per cent. has been attained.

IMPORTS AND EXPORTS OF LEAD.—The total imports in 1879 amounted to 102,089 tons of lead, pig and sheet, compared with 100,233 tons in 1878, and 94,412 tons in 1877. The great bulk of the imports in 1879 were received from Spain, which country contributed 74,486 tons; Belgium follows next in order with 6308 tons, Greece with 6161 tons, Holland with 5255 tons, Germany with 6053 tons, and Portugal 1899 tons. The total value of lead imports in 1879 is set down at 1,531,801*l*., compared with 1,818,676*l*. in 1878, and 2,015,438*l*. in 1877. Turning to the exports for the year 1879, there appears to have been exported of pig, rolled, sheet, piping, and tubing 37,007 tons, of the value of 570,667*l*., compared with 34,385 tons, valued at 644,456*l*., in the previous year. Russia received 10,493 tons, China, &c., 5932 tons, France 3389 tons, British India 3317 tons, our Australian colonies 3186 tons, Germany 1053 tons, the United States 1047 tons, and other countries not enumerated 8590 tons.

ZINC ORES AND METALLIC ZINC.—The total quantity of these ores, principally sulphides obtained from the 49 mines in operation, amounted to 22,199 tons, of the value of 81,531*l*., compared with 25,438 tons, of the value of 80,565*l*. in the previous year. The metallic zinc obtained from the ores in 1879 was 5554 tons, valued at 95,806*l*., compared with 6309 tons, of the value of 123,025*l*., in the previous year. The average market prices of zinc ores in 1879 did not exceed 3*l*. 9s. 3d., the highest price during the year being 5*l*. 9s. 6d., the lowest 1*l*. 15s. per ton, while a few low-priced parcels have been excluded. In 1879 and four previous years the production of zinc ores in the United Kingdom are returned as follows, to which is appended the average prices per ton of the ores and the metal:—

| Year. | Zinc ore. | Zinc. | Ore per ton. | Zinc per ton. |
|---|---|---|---|---|
| 1875 | Tons 23,978 | Tons 6713 | £ 4 2 3 | £ 24 5 0 |
| 1876 | 23,613 | 6641 | 4 12 0 | 23 18 4 |
| 1877 | 24,405 | 6833 | 3 17 4 | 21 15 0 |
| 1878 | 25,438 | 6309 | 3 7 8 | 17 18 4 |
| 1879 | 22,199 | 5554 | 3 9 3 | 16 13 6 |

In the above the price per ton of metal is that of English spelter. In the same year the average quotations of foreign spelter was 16*l*. 13s. 6d. per ton, and of zinc in sheets 21*l*. 15s. per ton, compared with 17*l*. 18s. 4d. and 22*l*. in the year 1878.

The details of production of zinc ores in each county in the United Kingdom with the respective values appear in the annexed summary:

| No. of mines. | Counties. | Quantities. Tons c. q. | Values. £ s. d. |
|---|---|---|---|
| | England— | | |
| 9 | Cornwall | 3,201 19 0 | 11,033 18 7 |
| 5 | Shropshire | 439 0 0 | 1,661 15 6 |
| 1 | Derbyshire | 79 0 0 | 276 15 0 |
| 5 | Cumberland | 1,542 14 0 | 4,958 19 6 |
| | Wales— | | |
| 9 | Cardiganshire | 525 14 2 | 2,175 13 2 |
| 2 | Montgomeryshire | 1,227 10 0 | 5,006 5 0 |
| 3 | Denbighshire | 3,330 0 0 | 13,727 0 0 |
| 6 | Flintshire | 2,898 14 0 | 12,277 12 0 |
| 5 | Carnarvonshire | 667 1 3 | 1,746 13 4 |
| 2 | Isle of Man | 7,427 16 1 | 27,697 9 5 |
| 1 | Scotland | 76 10 0 | 325 2 0 |
| 1 | Ireland | 184 0 0 | 644 0 0 |
| 49 | Total | 22,199 19 2 | 81,581 3 9 |

A few of the more important mines producing zinc ore were as follows:—The West Chiverton, 2781 tons, value 9733*l*.; the Nenthead Mines, Alston Moor, Cumberland, 1198 tons, value 4195*l*.; the Van Mines, Montgomeryshire, 1750 tons, value 4562*l*.; the Minera Mines, Denbighshire, 3102 tons, value 13,183*l*.; the Talargoch, Flintshire, 2767 tons, value 11,759*l*.; and the Great Laxey Mines, Isle of Man, which produced 7200 toas, value 27,166*l*.

IMPORTS AND EXPORTS OF ZINC.—The ores of zinc imported in 1879 amounted to 27,925 tons, of crude metallic zinc 33,903 tons, and of manufactured zinc 15,471 tons. In passing it may be observed that the ores of zinc were chiefly obtained from Greece 14,460 tons, Italy 7583 tons, Spain 3096 tons, and Algeria 2445 tons. Of the metallic zinc Germany furnished 18,984 tons, Belgium 6500 tons, Holland 6070 tons, and France 1420 tons; while of the zinc manufactures Holland, Belgium, and Germany furnished 5803 tons, 5752, and 3713 tons respectively. The exports of zinc in 1879 amounted to 9256 tons, of which 5682 tons was British and 3574 tons foreign; the great bulk of the zinc was received by British India and continental territories—of British zinc 4289 tons and of foreign zinc 1437 tons, while the several colonies of Australia received in the aggregate 202 tons of British zinc and 220 tons of foreign zinc.

PYRITES (mundic, sulphur, and arsenical ores).—The production of these ores in 1879 amounted to 20,275 tons, value 11,835*l*., compared with 29,837 tons, of the value of 19,099*l*., in the year 1878. The following is a summary of the returns with the respective values in the year 1879:—

| County, &c. | Quantities. Tons. c. | Value. £. s. d. |
|---|---|---|
| England— | | |
| Cornwall | 1,048 2 | 585 3 5 |
| Devon | 2,211 17 | 1,772 4 1 |
| Durham, &c. | 1,000 0 | 500 0 0 |
| Lancashire | 2,000 0 | 900 0 0 |
| Staffordshire | 1,500 0 | 750 0 0 |
| Yorkshire | 1,650 0 | 825 0 0 |
| Derbyshire | 1,500 0 | 700 0 0 |
| Cumberland | 500 0 | 250 0 0 |
| Wales— | | |
| Anglesea | 132 0 | 89 10 0 |
| Cardiganshire | 26 0 | 18 0 0 |
| Flintshire | 435 0 | 300 0 0 |
| Glamorganshire | 10 0 | 6 10 0 |
| Ireland— | | |
| Wicklow | 8,262 10 | 5,139 5 9 |
| Total | 20,275 11 | 11,835 13 3 |

The pyrites of Cornwall and Devon are chiefly arsenical, and those of Ireland cupreous pyrites.

IMPORTS OF PYRITES.—The total imports in 1879 of pyrites of iron and copper amounted to 481,392 tons, of the value of 1,050,545*l*., compared with 579,261 tons, of the value of 1,336,047*l*. Of the imports in 1879 Norway furnished 8485 tons, Portugal 82,529 tons, Spain 374,505 tons, and other countries 15,873 tons. The fine copper obtained from these pyrites in the metal extraction works amounted to 14,158 tons, compared with 14,453 tons in the year 1878 and 17,000 tons in 1877.

MISCELLANEOUS MINERALS.—From the cupreous pyrites imported from Spain and Portugal during the past ten years a considerable quantity of silver and a small quantity of gold has been obtained. During the year 1879 the silver thus obtained amounted to 193,004 ozs., and of gold 659 ozs., of the value of 46,062*l*. 10s. The principal portion of this silver as well as the whole of the gold was obtained from copper liquors at various extraction works by Mr. Claudet's process. A small quantity of silver was, however, separated from copper precipitate by manufacturers of sulphate of copper.

The auriferous rocks of Merionethshire and of Wicklow yielded in 1879 some 5001 lbs. of ore, when treated yielding 447 ozs. of gold, of the value of 1790*l*. Silver ore obtained from Great Crinnis and Carlyon and Wheal Newton, both mines in Cornwall, the first yielding 10 tons 13 cwts., the second 17 tons 6 cwts., the total value being 621*l*. 18s. 11d.

NICKEL AND COBALT.—A cobaltiferous iron ore is obtained at the Foel Hiradug Mine, in Flintshire, an average assay yielding 2·05 per cent. of cobalt and 0·75 per cent. of nickel; the ore produced in 1879 amounted to 116 tons 11 cwts., of the value of 833*l*.

OCHRE AND UMBER.—Chiefly oxides of iron of a red, brown, or yellow colour, mixed up with uncertain quantities of earthy matter or clay. The following summary gives the localities and quantities raised in the year 1879:—

| County. | Mines. | Quantities. Tons cwts. | Value. £ s. d. |
|---|---|---|---|
| Cornwall | South Terras | 112 0 | 56 0 0 |
| Devonshire | Ashburton | 1000 0 | 688 0 0 |
| | Smallacombe | 150 0 | 75 0 0 |
| Derbyshire | Bunting Place | 20 0 | 10 0 0 |
| | Discovery | 4 5 | 2 10 0 |
| | Mearom Rake | 22 0 | 12 0 0 |
| Northumberland | Waterhouse | 4 4 | 3 5 0 |
| Glamorganshire | Trecastle | 7 0 | 5 5 0 |
| | Garth | 102 12 | 76 19 0 |
| | Mwyndy | 40 0 | 30 0 0 |
| Angleasea | Parys | 244 8 | 297 10 1 |
| | Mona | 2111 0 | 1797 10 0 |
| Isle of Man | Patrick Malen, &c. | 156 8 | 382 11 8 |
| Total | | 3973 12 | 3436 10 9 |

MANGANESE.—These ores, raised from twelve mines in the United Kingdom, amounted in 1879 to 816 tons, of the value of 1515*l* 10s., principally employed for bleaching purposes and for the production of oxygen gas. Of the production in 1879 some 627 tons was raised in Cornwall and Devonshire, 179 tons in Derbyshire, and 40 tons from the Glandore Mine, in the County Cork, Ireland.

ARSENIC, obtained from the mines of Cornwall and Devonshire, produced in 1879 some 5492 tons, of which Cornwall contributed 1655 tons and Devonshire 3837 tons.

CLAYS.—Porcelain clay (kaolin) and china-stone raised in the counties of Cornwall and Devon produced in 1879 some 273,862 tons of china-clay and 38,142 tons of china-stone, the china-clay raised in Devonshire amounting to 30,687 tons. Fire-clay and potters' clay produced in Cornwall 682 tons. The quantities exported of china-clay and stone amounted in 1879 to 257,496 tons, of which the Cornwall Railway carried to Cornish ports for shipment 84,254 tons, the Cornwall Mineral Railway 108,328 tons of china-clay and 37,050 tons of china-stone. Potters' clay raised in Dorsetshire, at Poole, produced in 1879 some 114,415 tons, of which 5356 tons were sent to foreign countries, the remainder distributed in the United Kingdom and used in local works in Dorsetshire.

FIRE-CLAYS obtained from the coal measurus 2,358,745 tons, of this quantity 1,558,745 tons were obtained from mines under inspection, the remaining 800,000 tons being obtained from open-cast workings (estimated) not making returns to either H.M. Inspectors of Mines or to the Keeper of the Mining Records, the average value of these clays appears, as in 1878, to have been about 5s. per ton.

SALT.—The total quantity of rock salt and white salt obtained in the United Kingdom in 1879 amounted to 2,558,868 tons, compared with 2,682,930 tons in 1878. The total quantity of salt sent down the River Weaver alone, the production of Cheshire, amounting to 1,176,057 tons (of 26 cwts. each), of which 88,843 tons were rock salt, and 1,087,214 tons white salt. The chief localities yielding salt are—Cheshire, Staffordshire, and Worcestershire; and Carrickfergus, in the north of Ireland, near Belfast. The salt exported in 1879 and previous year was received by the following countries, the value appears side by side:—

| Countries. | Quantities. 1879. Tons. | Quantities. 1878. Tons. | Value. 1879. £. | Value. 1878. £. |
|---|---|---|---|---|
| Russia | 54,752 | 54,312 | 27,658 | 30,075 |
| United States | 278,622 | 230,703 | 173,495 | 148,198 |
| British N. America | 81,032 | 75,587 | 41,401 | 37,190 |
| British India | 310,200 | 231,819 | 177,700 | 148,764 |
| Other countries | 237,405 | 224,737 | 131,923 | 138,582 |
| Total | 962,011 | 817,158 | 552,177 | 502,809 |

BARYTES, also known as "heavy spar," produced in 1879 some 19,350 tons, valued at 21,068*l*., compared with 22,435 tons, of the value of 36,686*l*., in the year 1878. Coprolites and phosphatic nodules, occurring in the Crag and Upper and Lower Greensand formations, produced in Suffolk, amounted to 4000 tons, of the value of 8000*l*.; Cambridgeshire 25,000 tons, of the value of 58,750*l*.; Bedfordshire producing 5000 tons, of the value of 7000*l*.; giving a total produce of 34,000 tons, and the value of 73,500*l*. The manure manufacturers now depend chiefly upon foreign supplies. The port of Charlestown, America, is supposed to supply 170,000 tons yearly, of the value of 500,000*l*., and other places quantities to the value of nearly 200,000*l*. In 1879 the imports were about the same in quantity as in the previous year. The production in England is becoming less each year, but with an increasing value per ton.

OIL SHALES produced in 1879 amounted to 29,490 tons, compared with 29,043 tons in 1878. The remaining list, closing the returns of earthy minerals, are those of alum shale, producing 4097 tons; gypsum, principally obtained in Derbyshire and Sussex, the production of the former county being 56,668 tons, and of Sussex 5775 tons, valued at 18,733*l*.; calc spar raised in Derbyshire amounting to 1948 tons, of the value of 487*l*.

## Original Correspondence.

### THE SEAHAM COLLIERY ACCIDENT—PROPOSED NATIONAL RELIEF FUND.

SIR,—The occurrence of another terrible colliery explosion, with a loss of life greater than that of many a notable battle, prompts me to make a further appeal to the public through your columns on behalf of a National Accident Relief Fund. Two years ago, to-morrow, on the occasion of the Abercarne colliery explosion, I ventured to memorialise Her Majesty the Queen, urging the desirableness of establishing a National Accident Fund, for the purpose of making some provision for the unfortunate widows and orphans of miners and other workmen who lose their lives by accident. To that memorial Her Majesty, with characteristic promptness and kindness of heart, returned a gracious reply through her secretary, Sir Thomas Biddulph, who died at Balmoral within a few days after. The following is an extract from that communication:—

"The proposed contained in the memorial has received the Queen's best attention, and it is hardly necessary to say with what satisfaction Her Majesty would view the establishment of any plan by which immediate and permanent relief might be afforded to those who, by the sudden death of the supporters of a family, are at once rendered destitute."

The plan I then submitted met with encouraging approval, not only from the most influential portion of the Press, but from many noblemen and employers; and at a meeting held in the Town-hall, Manchester, under the presidency of the then High Sheriff of Lancashire, resolutions were passed in favour of the movement. A committee was also formed to carry out the project in connection with the various district organisations, at the head of which stand the Durham and Northumberland Miners' Permanent Relief Society, the Lancashire and Cheshire, North Wales, Midland, West Yorkshire, and North Staffordshire societies. Mr. George L. Campbell, of Wigan, secretary of the Lancashire and Cheshire Society, was nominated secretary of this central association. In consequence, however, of the depressed state of trade and other deterrent causes, the movement has not made the progress that could be wished. The efforts made by these local societies to afford relief have been most praiseworthy. The Durham and Northumberland Society has about 80,000 members, and the calls upon its funds may be inferred from the fact that, on the average, one out of every six workers in coal mines is killed or maimed every year. The Durham Society may be regarded as the pioneer in this good work. It was organised and is managed by Messrs. Blyth, Howie, and Steele, and its large funds have been subscribed by the miners, assisted by colliery proprietors, for the relief of widows and orphans, and workmen who are disabled, or may be "worn out" from old age and sickness. Its funds will be heavily drawn upon to meet the dreadful emergency which has sent a shudder of mingled horror and sympathy throughout the land.

The necessity of a national organisation to supplement local effort in the case of disasters such as that at Seaham and the explosions at Leycett, Dinas, and Risca, is evident from the fact that the appeals on behalf of the Risca and Dinas sufferers have realised only about one-half of the amount required.

I think it would be a great encouragement to the miners in Monmouthshire, South Wales, and other colliery districts, to follow the excellent example of the colliers in the North of England, and to establish district societies, if the public took the initiative in providing adequately for the bereaved families of the victims by the Seaham disaster, thus helping those who help themselves, and preventing the otherwise heavy drain upon the funds of their admirable local relief society.

The Lord Mayor of London will, no doubt, be willing to lend the influence of his position and experience to form a fund for the relief

of the Seaham sufferers; and I plead that the fund may be made national and permanent, on the ground of both duty and economy.

In aid of such a permanent fund I am authorised by Lady Biddulph to enclose a donation of 50*l.* "in memory of the late Sir Thomas Biddulph." I send a second 50*l.* from another source, and shall feel obliged if you will forward both donations to the Lord Mayor.

It is not generally known that an aggregate sum of no less than 100,000*l.*, the surplus of former relief funds, is lying unused in banks and elsewhere. This money ought, I think, to be handed over to trustees of the National Accident Fund, the formation of which I have proposed. In view of the urgency and perpetuity of the claims for relief in the case of accidents from any cause and the many reasons the English nation has for gratitude and thankfulness, I hope and trust there will be a prompt, hearty, and generous response to this appeal on behalf of a National Accident Fund.

*Culcheth Hall, Bowdon, near Manchester.* ELLIS LEVER.

## SEAHAM COLLIERY—THE EXPLOSION.

SIR,—This colliery (the scene of the explosion at 2·20 on the morning of Sept. 8) is the property of the Marquis of Londonderry. In the first or High Pit sinking was commenced in the year 1844. The second or Low Pit (about 220 yards east from the former) was commenced April 13, 1849. The principal seams and their depth in the Low Pit are as follows from the surface:—

| | | Ft. | in. | Thickness. Ft. | in. | | Depth. Fms. | ft. | in. |
|---|---|---|---|---|---|---|---|---|---|
| Main coal seam—Coal | | 4 | 5 | | | | | | |
| | Shale | 0 | 3 | | | | | | |
| | Coarse coal | 1 | 5 | =6 | 1 | ... | 218 | 1 | 4 |
| Maudlin seam—Coal | | 1 | 1 | | | | | | |
| | Shale | 0 | 3 | | | | | | |
| | Coal | 3 | 1 | =4 | 5 | ... | 226 | 5 | 2 |
| Low main seam—Coal | | 1 | 2 | | | | | | |
| | Band | 0 | 0½ | | | | | | |
| | Coal | 4 | 0 | =5 | 2½ | ... | 237 | 5 | 8 |
| Hutton seam—Coal | | 3 | 9 | | | | | | |
| | Coarse coal | 0 | 11 | =4 | 8 | ... | 254 | 3 | 11 |
| Harvey seam | | | | =2 | 10 | ... | 281 | 2 | 0 |

The sinking was continued to a depth of 299 fms. 3 ft., several small seams of coal having been passed through. Only three of the above seams have recently been worked—the High main, the Maudlin, and the Hutton seams. The output has been to the extent of 2500 tons in a day by means of three winding engines—that is, two winding engines at the Low Pit, and one engine at the High Pit. The Low Pit is the downcast, and was divided equally in two parts by wooden brattice; this brattice was all displaced at the lower part by the explosion, and the bottom of the pit has scarcely yet been cleared by the workers. The High Pit is the upcast from the furnaces below, and was fitted with wire rope guides for running the two cages in the pit. These guides were much damaged by the explosion, and were drawn out of the pit, as well as the cages, before a descent could be made by the exploring party. Through this pit 67 men and boys were rescued. The number of the lost has been variously stated, no register of the men who descended on Tuesday night having been made. A house to house visitation has been made this week, which makes the number lost to be 161. From a local cause more men were engaged in the night shift at the time of the explosion than was usual. This points to the desirability of having a correct register of the workmen going down the pit in every shift. The Seaham Pits were in operation three shifts in a day—that is, two shifts for raising coal, and one at night, principally for repairing and making ready for the day shifts.

The pits are each 14 ft. in diameter; they were put through the magnesian limestone and the new red sand underlying it, with little expense and delay, compared to other similar undertakings in the district—notably the Murton sinkings, about two miles to the rise or westward of Seaham Pits. At Murton three pits were put down, and three pumping engines erected of 1150 horse power in the aggregate; each of these pumped to bank with two 19 in. sets, in three lifts, from the depth of 90 fms., besides three other engines of 320 horse power, each delivering water in one 16 in. set to the surface by three lifts from the same depth. The total quantity of water raised, with a speed of 12 strokes per minute by the large engines, and 19 strokes by the small engines, was 9306 gallons per minute when the sand was being sunk through; its thickness varied from 26 ft. to 34 ft. in the three pits.

Keeping in view previous experience in sinkings through the magnesian limestone and sand, preparatory trials were made at the first Seaham Pit by putting down three bore-holes to ascertain the thickness of sand. One of these proved the sand to be little more than 3 ft. in thickness, and on this the pit was sunk. The two winding engines at Seaham were constructed in a novel form so as to be utilised for pumping out the limestone and sand feeders in the first place, and afterwards applied in raising coal. Each engine had one 66-in. vertical cylinder, 7 ft. stroke, with levers and condensing apparatus. For the high lift of pumps a staple 6 ft. in diameter was sunk in the engine house by the side of the cylinder, and beneath the front lever. From the lever a connecting rod is worked to one end of a beam placed below about level with the surface; the beam was 36 ft. in length, its other end working over the pit, from which the rods working the low lift of pumps in the pit were suspended. The high lift in staple was 38 fms., and the low lift in the pit was about the same, when the limestone and sand had been put through, and the feeders all dammed back by tubbing in successive stages.

The quantity of water pumped at each stage, and the depth of each section of tubbing, or the distance between the wedging cribs, is shown by the following, compiled by Mr. N. Wood:—

| No. of tubbing. | Fms. | ft. | in. | Water raised before insertion. Gallons. | | Water dammed back. Gallons. | | Water escaping after each insertion. Gallons. | |
|---|---|---|---|---|---|---|---|---|---|
| | 38 | 0 | 0 | ... — | ... | — | ... | — | To top of feeders. |
| 1 | 7 | 0 | 6 | ... 480 | ... | 430 | ... | 50 | |
| 2 | 4 | 2 | 0 | ... 540 | ... | 510 | ... | 30 | |
| 3 | 2 | 5 | 0 | ... 660 | ... | 610 | ... | 50 | |
| 4 | 3 | 3 | 0 | ... 960 | ... | 870 | ... | 90 | |
| 5 | 3 | 1 | 0 | ... 720 | ... | 660 | ... | 60 | |
| 6 | 3 | 2 | 0 | ... 1020 | ... | 480 | ... | 540 | |
| 7 | 2 | 1 | 6 | ... 840 | ... | 600 | ... | 240 | |
| 8 | 1 | 1 | 0 | ... 390 | ... | 240 | ... | 150 | |
| 9 | 3 | 1 | 0 | ... 480 | ... | 360 | ... | 120 | In sand. |
| 10 | 1 | 3 | 0 | ... 120 | ... | 90 | ... | 30 | |
| 11 | 4 | 0 | 0 | ... 30 | ... | 30 | ... | — | Main cribs (three). |
| 12 | 3 | 0 | 0 | ... — | ... | — | ... | — | |
| Total ... | 39 | 2 | 0 | ... 6240 | ... | 4880 | ... | 1360 | |

Three wedging cribs were laid at the base of No. 11 tub, as the foundation for the whole, one wedging crib being laid at the base of each section of the tubbing above. Only one of the engines was required for pumping the feeders; it was calculated to raise 1000 gallons per minute at a speed of 16 strokes. Another engine was erected, and the pumps were ready to be placed in the same manner had they been required. The feeders in the sand, as will be seen, were much less than in the limestone at No. 5 tub. The second, or Low pit, was sunk, and the water tubbed back, on the same system as that described, two condensing winding-engines of the same size and construction being erected here also for pumping water first, and on the completion of the sinking for raising coal.

The occurrence of a dreadful explosion in the Seaham Mines, after there has been almost an immunity from explosions for several years in the district in which it is situated, will bring the subject of colliery explosions still more prominently into notice. We have learnt nothing as yet as to the origin of the explosion, but its force has been terrific, indicating the presence of a large quantity of explosive material, and the wreckage in the Hutton Seam Mine is said to be something inconceivable.

The Seaham Mines are considered to be some of the most fiery in the Durham coal field; an explosion occurred at the same colliery in 1871, accompanied with a loss of 38 lives. So far as the circulation of air is concerned, scarcely another colliery equals it in the amount of air passing through the workings. This disaster will no doubt open up more fully the question of colliery explosions, their causes, and prevention; the question of whether furnaces and boiler fires are admissible in fiery mines; and what lamps are safe and proper to be used in them, either in the ordinary condition of the mine, or when a sudden discharge of gas takes place by which the atmosphere to a greater or less extent is rendered inflammable. We perceive, though a large quantity of air is passed through the mine, some other precautions are needed to prevent accidents. If we suppose a mine to be laid out with three main roads in the winning out—that is, one road for the main intake, and the other two for return airways from the branch roads on each side of the main intake, if a separate split of air is given to each branchway—there will then be no necessity for doors at these branch roads; the risk from their being left open will thus be avoided. Then again we require a safe and sure lamp, one that will not pass its flame to the outside should a fall of roof force gas quickly upon it, and it should be self-extinguishing should any extraordinary discharge of gas occur either from the roof or the floor of the mine. When we couple with this a prohibition of the use of powder, and the adoption of mechanical ventilation, we think a colliery conducted on these principles, and with good discipline maintained, will be (as far as human forethought can make it) almost perfect in its arrangements. It is to be regretted that mechanical ventilation is not more generally adopted in fiery mines considering the advantages it possesses over the primitive system of heating an upcast column by means of furnaces below. It would be well if mechanical ventilators were brought into general use, not only for their superior efficiency and economy in fuel, but for their utility and safety in cases of accidental discharges of gas, or an explosion of the same.

It is satisfactory to know that the lost in this explosion, with one or two exceptions, were members of the Miners' Permanent Relief Fund. Funeral legacies to the amount of nearly 1200*l.*, have already been paid by this relief society; 5*l.* is paid for a member who has been married, and a legacy of 23*l.* for one who was unmarried. Besides this 5*s.* per week will be paid to each widow as long as she remains so, and 2*s.* per week to each orphan up to 14 years old in the case of girls, and 12 years in the case of boys. The Marquis of Londonderry has contributed an amount to this fund for several years, equal to one-fifth the total amount paid to it by his workmen.

ENGINEER.

## RUSSIAN COAL FIELDS.

SIR,—I have seen lately more than one article in certain daily papers stating as a fact that it is useless English capitalists placing their money into Russian coal fields, owing to the extremely inadequate facilities for conveying the coal produced to the various markets. Now, when you consider the area of the coal fields in the Donetz Basin alone, such an assertion is a very broad one, to say the least, and exhibits one of two things—either a bitter prejudice against that country, studiously and invariably instilled into the minds of the English public, or an ignorance of the subject treated of in its entirety, which should rather have dictated silence upon subjects and countries the authors were not competent to guide the public upon. I know from such causes English people have often been deterred from embarking in enterprises in that country which have been taken up by other foreigners, and have turned out real and genuine successes. You might just as well before the Midland basins were supplied with railways have advised all intending investors in the Northern coal fields on no account to touch them, there being inadequate facilities in England for bringing the coal to market; because there might not be in the Shropshire district, is that any reason why there should not be ample facilities in the Newcastle district, and that because a few collieries that were opened some years ago on the Donetz Basin (which is of vast extent), quite out of the railway track, should have been starved for lack of railway communication? Is it logical reasoning that, therefore, all colliery properties on the Donetz Basin are to be eschewed on that account? The argument is too palpably absurd, and it is quite evident that whoever writes in that strain has not taken the trouble to go to those coal fields that are well catered for by railway companies, and which also have ample water carriage.

It has often been a source of wonder to me in my many travels all over that country that more of my own countrymen (who are capitalists, and who seek in every part of the world enterprises for investing their capital) should ignore so rich a country as Russia, easily comatable by rail or water in four or five days, and should permit themselves to be so completely blinded, and led by the bitter political bias of their favourite Daily, not allowing themselves to calmly think out the problem why these papers write of the country as they do.

The many stories written regarding Nihilistic disturbances and their effects are, to a large extent, fictions, and in many instances to my own knowledge, being in the country and the towns named, had not even the faintest shadow of a foundation except in the fertile imagination of the writers, have been and are, unfortunately, only too readily accorded the most absolute credence by the British public. What astonishes me much is knowing the way in which they have been and constantly are vilified by the English, and the utter untruthfness of the largest portion of the virulent attacks made against the nation that the Russian people are still so well disposed towards us. One thing is, they treat in most cases such attacks and their authors with the contempt they most justly deserve.

English people in speaking of the Russian nation are too apt to do so from an Englishman's point of view only, which they have no right to do if they are desirous of arriving at a just estimate of the people and its institutions they are speaking of. Is it fair, I ask, to expect the full extent of civilisation and settled institutions that England possesses, in a country that has only been freed from serfdom within the last 15 years, while England has to look back centuries for the same starting point (and she is only what she is now), and she ceases not to look on and speak scornfully of another nation starting from the same point only lately, because it has not already attained the same degree of perfection or position that she has.

I state it as an incontrovertible fact that Russia has made in most branches of civilisation far more rapid strides in the short time that she has commenced than England did when she commenced. In 1855 Russia had only one railway, and in 1879 she had certainly not less than 24,000 miles, forming a very considerable network, but capable of still further development. The telegraphic system is even more extended, and which permeates from the Baltic to the Pacific, and from the White Sea to the Black Sea, and across the Caspian to Central Asia. There are also many canals for improving communication. All the large rivers teem with steamers; gas and water works in the larger towns are the rule, and not the exception; petroleum is largely extracted from the ground, and converted in many places into gas for lighting—it is also largely used for steamers, locomotives, &c., but of this I will speak again. Let us return to the coal field. It is a most unreasoning, senseless, and narrow-minded argument to use, that because the coal and iron trade in this country has been and is, unfortunately, very much depressed, it is quite useless to talk of entering into colliery and iron speculations in Russia. If you only think the subject out you will scarcely fail to see there is no analogy. In the first place, the comparison is this—England, for the realisation of her vast output of coal, is dependent to an immense extent upon the purchase from her by foreign countries, who either have no known coal fields, or who have not developed them, and when those orders fail then the trade feels the terrible depression she has been going through. The same remarks equally apply to the iron trade, which also still further reflects upon the coal trade, because in these two commodities we are essentially an exporting country.

Russian colliery enterprise is not affected by any such causes. That trade is in no way dependent upon outside markets—the country there is hungering for coal to be worked and supplied; there is an abundant demand. Secondly, within the last few years the Government, finding that simply cautioning forest proprietors against the wholesale and indiscriminate destruction of the forests throughout the country to be all in vain, issued an ukase prohibiting the cutting of more than 1-40th of a forest per annum, and each 40th as cut has to be replanted. From the fact of the forests receding so fast as they have the fuel has to be brought from longer distances, and now, coupled with the fact of the necessarily reduced output, the price of the fuel has enhanced in consequence enormously. What are all the various industries to do that are users of steam-power and ironworks for smelting and the various processes? They must have coal. In this industry there is one of the most legitimate fields for enterprise of the most highly profitable nature. If *bona fide* capitalists when a really sound undertaking is offered to them would only think for themselves, and take a really personal interest in investigating the statements made, without rushing to ask the advice of someone who they fancy may know something about such a matter in Russia, and who for his own reasons and purposes sets the capitalists against it; and without sending other than an honourable, straightforward, and competent engineer (not one in name only and by assumption, and prejudiced against the country, or who if there is the least delay show immediately their ill-temper, and make out foregone conclusions prejudicial to the property they have been sent to view, with an assumed air of virtue on their part in not allowing the capitalist to take up such properties really because they wish to make use of him for some other affair from which they think to gain more for themselves, which is too often the case) to inspect the property honestly; the capitalists would find it to their advantage.

I know a colliery in the Donetz Basin of 20,000 acres of steam, bituminous, and anthracite coal. The steam and bituminous are the most worked upon and developed. In going to visit the district the introduction I took obtained me the greatest courtesy and attention on the part of the proprietor, who showed me over the whole of the property. I went down several of the pits; they were very dry, and the candle was used exclusively—no gas had ever yet been met with. They are worked on the pillar and stall system. The pits are all of them about 45 fm. deep each. Up to within the last two years the coal was all drawn up by horse winches. The pits are disposed so as to avail of the undulations of the steppes, by which means they are able to sink to the deepest of the upper seams by shallow shafts; but by sinking these to rather more than double their present depth they would come upon the first of the thick Donetz seams of 9 ft.; after that the 15 ft. seams. The present output is between 50,000 and 60,000 tons per annum. Lately the proprietor has put winding machinery. The fracture of the coal of some of the seams is similar to the Newcastle, and some to the South Wales bituminous Rhondda Valley coal. It makes a fine hard silvery coke (cauliflower coke) even in an out-door clamp. The surface is mostly beautiful steppe pasture (a short sweet grass). A considerable tract, however, is arable, which is usually sown with wheat. There are 10,000 sheep and several hundred oxen, cows, &c., and over 100 pigs. The folds are all well built, the walls some 8 or 9 ft. high, of mud and straw. On the estate there is also a fine new mansion—in fact, the whole is well appointed; but I am quite sure of one thing, that a courageous English capitalist would quickly alter many things with his engineer's suggestions to increase output and reduce labour. These are matters for technical knowledge to cope with, and that intelligently exercised would make a splendid success of it. There are three railway stations serving this colliery—two in near proximity, and one a longer distance, to which station the whole output in previous years has been always carted—and the River Donetz within a few miles of the pits, which is navigable direct to Rostoff on the Don, on the shore of the Sea of Azof. In the district I have been speaking of there is plenty of labour. It is a healthy climate—cholera, small-pox, scarlet fever, and such like epidemics have not been known there. The seasons are more equable than in the Moscow district, where it is intensely hot in summer; it often ranges in winter as low as 34° below zero Fahr., whereas in the former district it is not so intensely hot in summer, and in winter there is seldom much snow or frost; neither presenting themselves before the latter end of December, and often not till the middle of January, and the frost rarely exceeding a few degrees.

This colliery can be obtained on very advantageous terms for capitalists who would develope its resources to a far greater degree than they are now.

If any of your readers who are capitalists feeling sufficiently interested in this matter desire further information respecting this property, or generally upon properties in Russia, I shall be happy to give it to them on their applying through your office. VERITAS.

*London, Sept.* 10.

## THE TECOMA MINE, AND ITS MANAGEMENT.

SIR,—Having seen the letter of "Observer" in last week's Journal on the subject of the Tecoma Mine, of which I am also a shareholder, I should be obliged if any reader could give me some information as to the company's actual position, or the addresses of some one with whom I could communicate and arrange as to the best course to pursue to obtain communications from the Chairman or some of the officials of the company as to its position and prospects.—*Sept.* 4. P.

## HULTAFALL MINING COMPANY.

SIR,—Having had a considerable interest in this mine from the time of its commencement, now nearly three years since, I must express the extreme annoyance and disappointment that one cannot but feel at the carelessness and neglect with which we (the shareholders) are used. During my experience of seven years in mining investments I have never witnessed such an utter failure in performance after such high flown promises. The mine was ushered in with a most prodigious flourish of trumpets. The promoters promised the finest things—absolute certainty, and so forth. The mining captains who reported on it were supposed to be experts of the highest eminence. And what is the result. "Parturiunt montes, nascitur ridiculas mus." Very possibly the mines may be all that was said of them; but why should we not have any reports like other mines? When first it was started these appeared regularly in the *Mining Journal*, but now we hear nothing; we rarely ever get a quotation. Such continued neglect is intolerable, and it is extraordinary that the whole body of shareholders do not protest against it. X.

*Sept.* 15.

## MINING IN NEW SOUTH WALES.

SIR,—Mining as a business is so completely in its infancy with us as yet that our progress is very slow as compared with our enormous undeveloped resources; but the following extracts, taken at random from our leading weekly paper, show at least that neither copper, tin, nor silver are wanting in the colony, and all that is wanted is proper capital, knowledge, and energy to bring them to the front. The Tenterfield Star, referring to Vegetable Creek, says:—

We are much pleased to hear of the continued prosperity of this wonderful mineral district in the enormous yields of tin that are being continually found, which are described to us as something extraordinary, some of the deposits being of a richness that is almost fabulous both for extent and value. The large quantities of tin that are being continually found at this place, together with the sustained high price of the metal, is making Vegetable Creek one the richest mineral districts in the Australian colonies. We are reliably informed that Mr. Wesley's tin claim at Rose Valley, Vegetable Creek, is a perfect marvel both in the extent and quality of its richness. It far outshines anything yet unearthed on the Creek, and is at present without a rival in alluvial tin mining in the world. Some years ago, possibly before a hole was sunk at Rose Valley, Mr. Wesley assured the reporter of this journal that Rose Valley would be the scene of rich and extensive tin discoveries. Acting on this conviction, Mr. Wesley secured his present claim, which promises to handsomely remunerate him for his patience and foresight. [NOTE.—Over 6000 tons are now said to be in sight on one face of it. (?)]

The Cobar Copper Mine promises to be one of the best yet found—

Work still continues night and day at the mine. It is the intention of the directors to erect 12 new furnaces which, when finished, will make the output of copper over 100 tons per week. The miners of Cobar, as a rule, are the soberest body of men I ever saw in any place of the kind, and as a rule the most experienced, owing to which fact there are very few complaints, and less trouble for the overseer.

Silver is also being profitably worked for the first time here, although plenty of other veins are known to exist, notably one (500 miles to the south of Boorook) where the lode is sunk to 160 ft.—3 ft. thick—yielding from ½ oz. gold and 20 ozs. silver up to 2½ ozs. gold and 100 ozs. silver to the ton; but being pyritous, although there are 400 tons lying at grass these 20 years past, it just lies idle. So much for the enterprise (?) of New South Wales! The Tenterfield Star, July 17, states:—

We still continue to hear good news from the Boorook silver fields. The workings on the several claims of the Golden Age are proving more satisfactory than ever; the deeper, in fact, they go the richer the stone. At Messrs. Horton and Co.'s battery the works are becoming, under the able superintendence of Mr. Davey, more perfect, and the best and readiest methods of extracting the ore and smelting it into bars are now adopted. The returns for last week were, we understand, from 850 to 900 ozs. The Silver King claim is also doing well,

the result of the crushing at Messrs. Hardaker and Dennis's machine being very satisfactory. Other prospects are looking equally well, and the future of Boorook was never more confident.

*Sydney, New South Wales, July* 26. R. D. ADAMS.

P.S.—Chromate of iron ore is now being largely worked in New Caledonia, and David Storer and Sons, of Sydney, have just chartered the Sea Nymph (brig) to load a full cargo for Sydney.

## GOLD MINING IN THE DUTCH WEST INDIES.

SIR,—As an inhabitant of the Dutch West Indies for the last 25 years my opinion has been asked by some of my friends in Holland whether I should advise them to invest some amounts in the Aruba Island Gold Mining Company and the Aruba Agency Company. It may be interesting to the subscribers of your valuable Journal to be acquainted with the answer given by me to said friends.

The very name of the island upon which the companies are working—Aruba (not "where gold is" but *oro va*, "Gold is gone," the Spanish *r* being prounced like *b*) should warn the public to be on their guard. It is now almost 12 years that the concession for working the gold mines at Aruba has been granted by the Government, more than eight years that this concession has been transferred to the Aruba Island Gold Mining Company, and what has been the result of all these years work? Notwithstanding the "most sanguine hopes" which were entertained as soon as a new demand on the shareholders had to be made, or whenever other means of procuring funds had to be resorted to, its existence is said to have been "full of disappointment and difficulty." A member of the Colonial Council some years ago stigmatised the company as being in a continual state of agony. Nobody in the colony thinks different of it now. None of the inhabitants would buy a share in it, for they know very well that no trust can be placed in all what is said as to the great expectations, the substantial dividends, &c. The expectations held out are too good to be true. I only will call attention to the statement that already more than 200 mines have been discovered on the island. If every spot where quartz has been found is called a mine I wonder why the statement does not say 2000. Both companies—the Aruba Island Gold Mining and the Aruba Agency (the last has been called the dead-born child of an agonising mother)—are again in want of money. Both make a new call on the public to enlarge their capital. Now, if the capital were to be used for the further development of the mines I should say take a few shares. May be by so doing you will help the poor Island of Aruba; but no; the money is said to be required to pay off the mortgages of both companies. If the business is really a "going concern" why not wait patiently the "substantial dividends" which are now said to be forthcoming? Great stress is laid upon the fact that 15 Italian miners have been carried to the island to work the mines, the company having found itself "in an unprecedented difficulty during the last harvest in getting the natives in sufficient numbers to work the mines." I know of enterprises in the colony where four and five times the number of labourers are employed than the company would require, and not for a single day were the natives backward to come to their work; but then they were well paid, and in *cash*.

At the meeting of the Aruba Gold Mining Company, held July 23, the Chairman of the company said—"The phosphates will be another source of income to this company;" while at the meeting held on Aug. 30 allusion was made again to the phosphates. In regard to the question about the phosphates I am able to give the most exact information, being fully acquainted with all particulars and the parties who are owners of the concessions of the very same grounds on which the phosphates are found, who have been paying and are still paying land taxes on those grounds for the many years they have been and are in possession, and they do not intend to abandon their rights on the same. By sentence of the High Court at the Hague—the highest judicial authority for the Netherlands and colonies—it has been decided that the Aruba Gold Mining Company has no right whatever in the phosphates of the Island of Aruba. This sentence bears the date of July 1, 1877; therefore, the rights of the landholders on the phosphates will undoubtedly be acknowledged as soon as application is made for the same, which will be done when it suits their purpose, and then "this source of income" will not exist for the company. In January, 1879, the Curaçao Government granted a concession to Mr. Sewell, and in this it seems the Gold Mining Company is interested for 25 per cent. to work the phosphates on a certain part of Aruba; but by the stipulations of the concession it is proved that the Government itself fears the consequences which may arise from this concession. In proof I will only quote the following—"The Colonial Government is not responsible for any claim which may arise between the concessionaire and the holders of other concessions of whatever nature they may be, and indifferent under whatsoever circumstances they may have been granted. The concessionaire is bound to guarantee the Colonial Government for all the consequences of possible law-suits, which may be entered against the Colonial Government on account of and in consequence of this concession." I think this is more than sufficient proof that it is still very doubtful whether the phosphates will be "a source of income" to the company. As long as it has not been decided that the landholders have no right on the phosphates it is well for the Aruba Gold Mining Company, the Aruba Agency Company, and the Aruba Phosphaat Maatschappy to bear in mind the old saying—"Do not reckon the chickens ere they are hatched."

*The Hague, September.* A. M. CHUMACEIRO AZ.,
Solicitor-at-Law.

## THE ARUBA ISLAND (DUTCH WEST INDIES) GOLD MINES.

SIR,—Your correspondent "Gold Mining Engineer" in last week's Journal administered a very proper rebuke to the writer of a letter which appeared in the Journal of the week previous signed "An Old Subscriber." I happen to be one of the original shareholders in the Aruba Island Gold Mining Company, and I beg to thank "Gold Mining Engineer" for his manly and evidently disinterested letter. I am a bondholder also of this company, or rather was until recently, for I am exchanging my bonds and coupons for 25 per cent. preference shares under an arrangement lately sanctioned at a special general meeting. In other words, I have held on to my investment since 1872, and from being one of a very few shareholders who have taken the trouble to ascertain what during the last two years or so has been done by the Aruba Agency Company (Limited), which is working the gold mines at Aruba under tribute as it were to the parent company. I have good grounds for believing that I shall ere long not only be receiving 25 per cent. upon my hitherto locked up capital in the debentures, but by-and-bye a dividend upon my original ordinary shares.

As with the dog in the proverb who has been down on its luck—no matter for what reason—so it seems it is with the Gold Mining Company. Let a gold field be proved to be ever so rich in the precious metal, and that the gold can be easily extracted at a profit when the mines have been properly developed, because the original working capital of its original owner or owners has been frittered away in mismanagement and extravagance, according to "An Old Subscriber" and his "Client," the gold mines in question must be worthless, and the public should be warned against such a company. Fortunately this is not the opinion of a great many and sensible people, or we should not have so many instances of mining enterprizes being ultimately successful after not one person or one company, but many, had expended large sums of money upon them without success. The usual experience is that the original capitalists sink their good money irretrievably, and their more fortunate successors step in and reap the harvest of dividends. It happily is not the case with the shareholders of the Aruba Island Gold Mining Company, and if your correspondent's "Gold Mining Engineer," and "An Old Subscriber," will send their names and addresses to the secretary of the Aruba Agency Company, Gresham House, Old Broad-street, I will see that the copies of a recently issued private prospectus of that company be sent them. It will gratify the one and I think astonish the other. In this private prospectus will be found, instead of a few assays, nearly 1000, and these assays not of samples of crop ore, or of specimens, as supposed by "An Old Subscriber," but assays of the ore sent to the stamp mill during the presnt period of development of the mines. Mill samples and working assays in other words, and not the usual assays of prospectors and promoters of mining companies. It will be found, too, in this prospectus (which is virtually a report from the directors of what has been going on for the last 18 months) that the average of the assays is under 2 ozs. to the ton, and that there is practically an inexhaustible supply of this ore. All persons who know anything about gold mining will agree with both of your correspondents that it is quantity of ore of a paying character which pays good and continuous dividends, rather than here and there rich pockets of gold running into, in some cases, hundreds of ounces to the ton.

It will be found also amongst other things, contrary to what "An Old Subscriber" states, that the directors of the Aruba Agency Company (Limited) are not relying upon wind-power to crush the 800 tons of ore per month spoken of, but upon simple, though more expensive, steam-power. Three effective wind-mills or wind-engines are, I happen to know, however, at work on the said land of Aruba, doing pumping and other work, and I hear it is the intention of the company to apply the wind-power to ore crushing purposes in due time. Many other items there are in the prospectus I allude to which will interest both of your correspondents, I feel sure. When "An Old Subscriber" learns that the gentlemen who have been finding most of the capital of the Aruba Agency Company upon the mortgage now propose to take fully-paid ordinary shares in that company at par in full discharge of their mortgages and interest he will or should allow that he has no need to warn the unwary investor against subscribing for any shares in the Agency Company. The public, however, have not, if I am rightly informed, ever been asked to subscribe.

I note that your correspondent "Gold Mining Engineer" refers to a plan for cheaply concentrating tailings. I am sure the directors of the Aruba Agency Company would be glad to receive a communication from him on this important subject. There is always or should be free trade in gold mining business, as there is never any danger in one company glutting the market with gold to the detriment of another. Anyway, I should be glad to make the acquaintance of your correspondent to thank him in person for his manly and common-sense defence of a gold mining company which, in spite of all difficulties, has been able to weather the storm, and which, as I hope and believe, will soon give its first dividend to—

A SHAREHOLDER OF THE ARUBA ISLAND GOLD MINING COMPANY.

## GOLD MINING ABROAD, AND IN THE DUTCH WEST INDIES.

SIR,—In reply to your correspondent, "Gold Mining Engineer," in last week's Journal, I must with candour admit that I have not the slightest desire to "worm" myself into such an undertaking as the Aruba Island Gold Mining Company have in hand, and had I shares I would reverse the process by trying to "worm" myself out of the company, like many more with whom I am acquainted.

Regarding his recommendation to subscribe fresh capital to make another trial, on the supposition that this field has not been adequately investigated, I beg to give you the remarks of a former employee of this company on its various phases, which he states in three periods—

1.—That Isola, the original concessionary, could not make the mines pay anything like the cost of working them.

2.—That on his retirement, Messrs. Ricketts, of New York, tried their hands, and after much experience they came to the determination of surrendering their rights.

3.—The Aruba Island Gold Mining Company entered on the field with many kinds of crushing machinery and other necessary appliances, and made their trial, and with what results the general public do not seem to be posted up as yet. In this case, as usual, the Britishers paid considerable promotion money to the Americans, which may be seen by anyone who may pay their shilling at Somerset House.

The adaptation of wind power to crush quartz is not impossible, but I suppose the original shareholders would not require any particular remarks on this subject, as experience is the best teacher, for that power has been used in Aruba Island for crushing quartz, and selected quartz mined under the able superintendence of the Messrs. Rule, who are Cornish miners of very extensive experience, as you are aware, in all branches of English and American mining, who gave this reputed gold field a thorough practical trial, from whence the question arose as to where the gold had gone from the large amount of quartz thus treated, and the echo answered most decidedly not into the pockets of the shareholders of the company, and certainly it was not to be found in the quartz, rough or fine, as surmised by the investors, or in the tailings supposed to be thrown away by inexperienced hands.

It is possible that the company could crush 800, or even 8000 tons of quartz per month at Aruba Island by wind power, but it is highly improbable that they would do so; not but that the quantity of quartz could be supplied, but because the average quality of that quartz is such as would render the undertaking an unprofitable one.

I do not doubt, from the varied experience I have had abroad and at home that tailings are often found to hold sufficient metal, if economically worked by individuals, but perhaps "Gold Mining Engineer" may be able, in this age of improvements, to adapt his method of concentration to the treatment of these remnants of former workings, but it is rarely the case that they are found of sufficient value for a company to undertake the manipulation of them.

AN OLD SUBSCRIBER.

## INDIAN GOLD MINES.

SIR,—In last week's Journal an advertisement (more than once repeated) requests the notice of intending investors in gold mining shares to an article headed as above; the capitalised value of the Indian and of some of the Australian companies shows an apparently astonishing difference; but had the writer gone a little deeper, not into the mines but into the mining particulars, the inferences would be different considerably from those he seeks to draw or point out. The Indian mines are not mines, but properties; not of a few acres, but of some hundreds of acres, each. The Devála-Moyar, for instance (taking it simply as first on the list given), has land of over 2000 acres; in that, probably, a mining acreage of one or more hundred acres. Various of the other Wynaad properties, not mines, are of nearly a similar area. The Mysore Company's land (which is not in Wynaad) is of several hundred acres, the whole of it being traversed by different auriferous reefs. It is a portion of land selected from some thousands of acres, and so selected because of the reefs in it. In Australia such land, in place of being held by one company, would be held by many companies. "The English-Australian," says the article referred to, "immediately adjoins a gold mine in the same reef which has been paying dividends for a long period." Just so, there is the point, and the point of difference—"on the same reef." What extent of the reef have each? The Mysore Company have land with five reefs, and those reefs run north and south for over a mile in length. The par value of the English-Australian is given as 22,000*l*; the value of another mine, the London and Californian, "55,000*l*. only." On the Mysore Company's or other Colar land of similar size there may yet be fifteen to twenty English-Australian or London and Californian companies

Then again, as to shares or investments in mines, in Australia the mines are mostly worked by the owners, who are as a rule on the spot, or at least in the colony, and know exactly what is going on—the values vary from week to week, not so much from the element of speculation as from the known outputs and known richness of the ore come upon: a rich vein struck (to last a month or two possibly) and the prices rise. The mine is not a property for investment (at least over the whole of Australia probably half-a-dozen or so only are), but simply for a quick return; not for work or for profits to last for years, but for work and profits to be realised and done with in a few months, or a year or two at most. The Indian reefs are calculated to give a steady output of 100 tons of quartz per day for perhaps the next 25 to 40 years.

"Quantity of pay rock, not extra quality, is the essential to secure success in gold mining," writes "Gold Mining Engineer"; "cause of failures, dishonesty of managers and promoters," writes "An Experienced G. M. Engineer"—both, as it happens, in your Journal of last Saturday. Now quantity is what is wanting in Australia, land and reefs are so subdivided. The calculation of output and duration of one reef in the Colar district (Mysore), made by an experienced Australian miner was that going to a depth of 300 ft. only, and raising 100 tons per day, the quartz from that reef would last for upwards of 60 years. The managers in Australia are, as a rule, part owners, and every man working in the mine has probably a share in it; directors are personally responsible, not only in pocket but in other ways, for the statements they or their prospectuses make, and the public must be and is well able to judge from the statements in the prospectuses and the reports given by, or for, the various companies, as to the worth of the properties offered. Some men will always cry "Wolf," a few go the length of saying the time will come when we shall have so much gold that it will lose its value. "What is, after all, the immense production of the last 30 years in Australia, in California, and elsewhere?" as the Standard at the conclusion of a leader on the gold currency question just the other day remarked, "the supplies of gold are now inadequate to meet the ordinary requirements of civilised mankind."

Doubtless among the companies we hear of as to be brought out ere long some may be simply and solely for the purposes of speculation; the public have been and are well warned and are well on their guard. INDO-AUSTRALIAN.

## THE GOLD MINES OF INDIA.

SIR,—A letter in the Journal of Saturday last regarding gold mines in Southern India appears to me calculated very much to mislead and to create in the minds of many persons a prejudice against the development of a wonderful enterprise, destined, in my opinion, to be of the utmost importance to India in particular, and to the world at large. How any thoughtful and sober-minded person who carefully read the statements put forward by the South-East Wynaad Estates and Gold Mining Company (Limited), in the printed document of reports from their mining engineer, and not be convinced that enormous quantities of gold will find their way a few months hence to this country from India, I am at a loss to conceive.

I became a shareholder in this company because I felt that the directory was an honest one, and had launched the concern in the full belief that all the statements made in the prospectus were reasonable and justified, and that their highest hopes and expectations would likely be more than realised. Moreover, the highly respectable firm of stockbrokers, Messrs. Fielding and Son, 4, Copthall-court, in a circular accompanying the prospectus, took the trouble to recommend the company as a genuine and trustworthy one.

If any honour or truthfulness is in the world, surely we must take the statements sent home to the company from time to time by a man of Mr. Oliver Pegler's standing and experience as a chronicle of facts as they appear to his sight and judgment. If, on the other hand, he should be found to have made wrong and fictitious statements, depend upon it he would be most severely censured on his arrival in England a few weeks hence, and condemned as a visionary and enthusiast by the shareholders, who would, doubtless, soon take measures to punish such misconduct. The company has, however, I am aware, the greatest confidence in Mr. Pegler, who will no doubt be able to give the shareholders, at some meeting that I presume will be called, a good account of their property.

At the statutory meeting of the shareholders, held on Wednesday April 28, at the City Terminus Hotel, and reported in the Journal of May 1, it was stated by the Chairman that the directors are perfectly satisfied with their properties, and that they would not adopt an unworthy system of "puffing," but let the whole matter stand upon its own merits, which, of course, is the right and honest thing to do.

If your readers will fully investigate the merits of each of the Indian gold companies now before the public, I do not think they will have much difficulty in arriving at the conclusion that the South-East Wynaad Estates and Gold Mining Company (Limited) is, in the language of Mr. Pegler, "second to none," and in truth and in fact, superior to them all. In saying this I do not wish to infer that other of the Indian gold companies that have been formed will not prove successful, but I am only concerned at the present time in the welfare of the one in which I am a considerable shareholder, and in which I purpose increasing my pecuniary interest from time to time as opportunity offers. A SHAREHOLDER IN THE SOUTH-EAST WYNAAD ESTATES AND GOLD MINING COMPANY.

*London, Sept.* 15.

P.S.—The South-East Wynaad Company could now, I believe if they pleased, pay a dividend of 5 per cent., the proceeds of some coffee received from their estates.

## ISABELLE GOLD AND SILVER MINING COMPANY

SIR,—As a shareholder I wish to know the reason the annual meeting has not been held. What has become of the tunnel scheme? What of the mines? What of the Patent Capsuling Company? Why are we kept in the dark? A SHAREHOLDER.

## CANADIAN MINING NOTES.

SIR,—It gave me great pleasure to read the letter of "Canadiensis" published in the *Mining Journal* of Aug. 7. The writer wrote with a knowledge of his subject, and suggested a scheme for the development of Canadian Mines that appears to me worthy of great consideration. "If Canadian property is to be energetically worked by English capital the Canadian owners must be liberal. No one desires them to give away their property, but they must make the payment depend absolutely on the result. They must grant their mineral lands upon the condition that a certain amount shall be expended upon them for labour in each and every year, the expenditure being determined upon by a resident committee, consisting of two mine managers chosen by the directors, two by the owner, and an umpire selected by these four to give a casting vote in case of divided opinion. There are innumerable Canadian mines where 200*l*. per month expended for a couple of years would give a permanent profit of 50*l*. per month from the end of the first year, which represents over 10 per cent. per annum, and selected mines would assuredly give five times that amount of profit." The principle here enunciated I agree with; the result of the calculation as I make it gives a very much larger per cent. than 10 per cent. per annum.

Now, the difficulty of carrying the scheme into practice may be thus plainly stated. A Canadian cannot get money in Canada to put into mines. In the first place, all men with money in Canada are too afraid. The energy of the country belongs to young men with little capital; the capital, the caution, the usury of the country, belongs to the older men who have made their money by long years of work by saving one penny, and when they get another penny lending the two pennies out at from 10 to 12 per cent. on landed property. Is it at all likely you could persuade those men to go into a venture like mining, where you either "make a spoon or spoil a horn?" The fact of it is there is too little capital among Canadians to expect them to develope mines. People in England have no idea of the small amount of capital belonging to the people in large sums. I do not believe there are 300 men in Canada from the Atlantic to the Pacific worth 20,000*l*. (with all their debts paid) of purely Canadian capital. Our country at present, so far as capital is concerned, is more like Belgium. Almost everybody is in comfortable circumstances, but the money is distributed, and it would take a great deal of investigation and enquiry to find any large sums of money waiting for investment, and willing to take a risk in order to gain a greater profit. Such being the case with regard to Canadian capital, we must depend on other and richer countries for the money necessary to develope the mines. It naturally follows that we seek the United States and England, as we speak the same language, and are governed for the most part by the same kind of laws.

Now, the difficulty in carrying out the scheme of "Canadiensis" is this. A Canadian having a good mine, with good samples, assays, reports, &c., arrives in London. He believes in the mine, is willing to make his money out of the mine, and to take a share of the profits in payment. Suppose the mine is argentiferous galena; the assay, $50 to $75 (a ton of 2000 lbs.) in silver, 500 lbs. in lead, $6 in gold, with traces of antimony and copper. A stranger in the City of London, he enquires how he shall dispose of his mine; he is advised to call on a gentleman in "the City;" he calls on the gentleman, is well received in a nice office, and treated kindly; he opens his business, and proposes the scheme of "Canadiensis." The gentleman smiles, and tells him that he does not see "how he is going to make any money out of that scheme." "But I tell you what I will do I

see your mine is good, your samples, assays, and report all satisfactory, and I can get up a company and take so many shares stock as my pay for getting up the company. I will do it if you choose, and get the company all stocked, and the mine working in a month." But the Canadian says, "I should like the shareholders to derive the full benefit of the mine, and I should like the scheme of 'Canadiensis' to be carried out." And the gentleman says, "Who will pay me for my trouble; I cannot afford to work for nothing. If your mine turns out well it will pay as much per cent. as five-tenths of the dividend-paying mines, and if it turns out very rich it will pay a great deal more. The stock will go up; half of my clients do not care a bit about the mine; what they want to do is to buy stock for a rise." So they separate, and the Canadian tries to place his mine according to the scheme of "Canadiensis." After wandering from one to the other and receiving the same answer, he finally comes back to the first man, and tells him to "go ahead;" that he finds he must do the way the rest of the world are doing. This would be the practical effect of trying to sell a mine in London according to the scheme of "Canadiensis." I agree with the principle of the scheme; I think it is but fair that the shareholders should reap the full benefit of the mine, but practically I do not see how it can be worked. Each mining broker has his *clientele*, his reputation to maintain, and his living to make; they cannot be expected to take hold of a promising mining project without being paid for it, and how are they to be paid? The Canadian cannot pay them, for he has hardly enough money to get back to Canada; the broker will hardly be willing to wait for his pay till the mine begins to develope its riches, and take a part of the one-fifth of the mine. How is the scheme of "Canadiensis" to be worked practically? That is the question. Both in the United States and in England the practice of selling mines to a company for a certain sum and having the capital stock of the company for a much larger sum prevails, and it is done for the purpose of paying the mining broker for his time, trouble, and experience, and I do not see any other way that can be devised for paying him.

If there were a Canadian Bureau of Mines in London, so that the shareholders and the owner of the mine could be brought together, perhaps that would do away with the system. Still I doubt it, for the shareholders, as a general rule, do not know much about the mines personally, and they would rely on the experience of their old business men, the brokers. Sir Alexander T. Galt (10, Victoria Chambers, London, S.W.) is our Plenipotentiary so far as Canada is concerned, and it appears to me if "Canadiensis" and others interested in the development of the mineral resources of Canada were to wait upon him perhaps a scheme might be devised whereby the amount of the sale of the mine, and the amount that the mining broker would receive as payment for his trouble, would be known and published before the shareholders took any stock at all. Another thing that Sir Alexander Galt might do, and that would be to have a collection of the minerals of Canada, and different geological reports and maps in his office, so that any person desirous of taking stock in a Canadian mine could receive accurate information with regard to it. It is to be hoped that some scheme may be devised, but in the meantime Canada stands in no worse position than England herself or any other part of the world with regard to the matter under discussion.

"Canadiensis" says as follows:—"What 'Bournonite' must show is that the law protects the capitalist, and that there is a sufficiency of labour and of either water power or fuel to make the work remunerative." In answer I have to say that "the law in Canada, and the execution of it so far as the 'protection to capitalists' is concerned, is as good as it is in England, and the expense for getting out Letters Patent of incorporation very much less. As to labour, it is about 4s. sterling a day unskilled. As to water power and fuel, that depends on the particular mine." Again he says, "He must show capitalists how to obtain the mineral grants at what the Americans call bed rock prices." In answer I say, "If a capitalist wants to come out to Canada and stumble over the rocks of some of our mineral regions and find a good mine, he can do so, and can get the loan from the Government at $1 an acre. If it is already granted by the Crown he will not find any difficulty in getting the farmer to give him a mining lease on very reasonable terms, and he can go back to England and start a company on the same terms, and allow all the shareholders to take stock. He can make the capital stock as low as he pleases, and if he paid $500 for the mine he can divide it into 5 shares of $100 each, or 500 shares of $1 each, or average it as he pleases. There is nothing in the law to prevent him. BOURNONITE.

*Brockville, Ontario, Canada, Aug.* 28.

P.S.—The silver mining region of Lake Superior, on the north shore, is attracting a good deal of attention in the States, and a large party of gentlemen and mining experts from New York have gone out there. The province of Quebec, north of the Ottawa river, would be a valuable field for exploration.

## PRACTICAL MINERS, AND MINING SCHOOL STUDENTS.

SIR,—Having engaged in practical mining almost as soon as I emerged from the cradle, and having during a long series of years gone through the routine of metallic mining in all its classes, shapes, and phases, I cannot remain silent and indifferent whilst I see your columns encouraging the pretensions of institutions which are, perhaps, useful for teaching young men chemistry and mineralogy, but which are certainly valueless to teach them mining. Do, Sir, try to put a stop to these pretentious teachers of mining, to mine dabblers, for their name already is legion. Let mining alone for those whose province it is to attend to it, and by whom it is understood. Even chemistry is not at all essential to the miner. The mining captain has too many other occupations to be able to devote either time or attention to a laboratory at the mine. Do not let professors in mining schools entertain the erroneous idea that what they teach can possibly benefit a man in the prosecution of his mining duties, or that it is at all promotive of the mining interest. Admitting that a knowledge of mineralogy is, as indeed it is, a desirable acquisition for a miner, I do not think that it should be pretended that the study of it has any important influence in making one a miner; in fact, the pupil is as ignorant of mining when he leaves the institution as he was when he entered it. Why, then, so unscrupulous and inconsiderate as to foist such lads—say, young men if you like—upon the public as suitable to fill situations as managers of mines? Where is there a member of the Government who knows what should be the qualifications of such a person? Is it not the ignorance of this that gave rise to the anomalous thing called mining schools?

The very name mining school is no less anomalous than absurd; and I reiterate what I have repeatedly told your readers that such institutions are not only useless as to mining but absolutely injurious to the mining interest; indeed, great has been the injury which has already resulted from them. I say injurious, for there are hundreds of capitalists in England who invest their money in mining, and who are simple enough to believe that a mining school is the only place whereat mining can be properly taught—the writer has heard many thus express themselves—hence they select its pupils to manage their mines, and great is the fall thereof, the pupil being as ignorant of mining when he left the school as when he entered it. After he has uselessly spent or squandered all the capital the whole thing collapses, and there the matter ends! As I have before stated, the only school at which a miner can acquire a knowledge of his profession, a proper qualification for a manager of a mine, is, pick in hand, exploring the bowels of the earth, and not by sending the pupil once now and then into a mine, endangering the poor lad's life. What knowledge or idea can he acquire of the phenomena of mining by this? None; not the least whatever. The minor items alluded to by mining school teachers, such as mine surveying, is now, it appears, intended to be taught. A mighty piece of work this! A thorough knowledge of this could be acquired at the mine, by any mining captain of intelligence in six hours, and in six other hours, if he have had but even a commonplace scholastic training, he can learn to make a plan of his survey. But anyone who possesses the smallest particle of common sense must know that a fashionable tailor might as well be made by serving his apprenticeship with a blacksmith as a boy at a school could be taught mining. He may be taken underground, in the usual way, until he is grey-headed; he may win prizes and scholarships; but as far as mining is concerned, or the benefit that it will be to him in relation thereto, all is in vain. Many a mine have I visited which has been under the management of gentlemen who have acquired their knowledge in mining schools, and I have always found the workings, if workings they may be called, without order, system, or judgment.

In your recent report of the meeting of the Miners' Association of Cornwall and Devon there is a long discussion between several gentlemen on the respective merits of common gunpowder and the more violent explosives. On this there seems to have been a variety of opinions. One of the debaters said that he had seen powder that could not be put off with a red-hot poker. I never saw this, but have known many a poor man who has been killed by its quickness. Another said that the "detonator was so dangerous that it killed the men." If it kills more men than the powder the greater the pity; the powder killed far too many, and if a greater number is killed by the other it should be banished out of sight. The abominable stuff should not be brought in contact with human life. Mr. Husband seemed to advocate the use of detonators as of quicker combustion. This is exactly what the miner does not want; he tries to balance his charge of powder as nearly as he can for the work it has to do, so that the rock shall, by the slowness of the motion have time, as it were, to cleave or rend, instead of suffering a sudden burst. Several in this discussion too were talking about a thing of which they knew little or nothing.—*City, Sept.* 13. A PRACTICAL MINER.

## ROCK-BORING MACHINERY.

SIR,—In perusing the columns of your valuable Journal one cannot but be at a loss to account for the variety of opinions which appear still to exist respecting the advantages to be derived from the application of rock-boring machines for mining purposes. Your issue of the 11th inst., giving a report of the general meeting of the Carn Brea shareholders, would tend to show that this diversity of opinion is not confined to the minds of theoretical men alone, but that some of the most competent practical miners of the day differ in estimating the desirability of using the machines, and the results to be obtained by them; in fact, it is evident that the purser of Carn Brea and the manager of Wheal Grenville are directly opposed in their respective views of the subject. The system of driving tunnels for railways and levels in mines by the use of rock-boring machinery has now been practised sufficiently long to demonstrate beyond doubt that the system may not only be employed successfully, but that great advantages in the saving of time and cost may be obtained from its application. If in a few isolated cases the system has not been successful; no doubt the failure might be attributed to the want of methodical arrangement, the employment of insufficient or unsuitable explosives, or probably to the machines themselves, of which there are such great variety, being unsuitable to the particular ground they were used in. Of all the improved mining machinery introduced during the past few years rock-boring machines are of the most importance, and no difference of opinion should exist respecting the very great advantages to be derived from their use, it remains only to ascertain from actual results of working which of the many kinds offered to the public are suitable for the special work to be performed, attention being given to the nature of the ground, the motive power at command, and the ability of the miners to manage a machine more or less complicated. A. B

*Sept.* 13.

## CORNISH MINE MEETING DINNERS

SIR,—Whether the pursers of Cornish mines are going to sit still under the accusations made against them by Messrs. Watson Brothers in your last week's Journal I know not. Certain am I that with regard to two mines situate in Cornwall the assertions are untrue and unwarrantable—Gunnislake (Clitters) and Old Gunnislake. In the former I have been a shareholder for upwards of 20 years, the latter from its just newly commencement, and I defy anyone to show there is any such account as "owners' account" in either of their cost books. I have attended the dinners of the former, and I vouch for it that they never, in any instance, cost the mine more than 3s. a head, including spirits, the largest attendance at any one time not exceeding 20. At the inauguration dinner of the latter at the Bedford Hotel, Tavistock, the only one that has been held, each shareholder paid out of his own pocket 3s. 6d., which included beer and one glass of spirits. With regard to the examination of the accounts of these two mines I can testify that they are most searchingly scrutinised. The mines are carried on under the supervision of a committee of gentlemen resident within a few miles of the location of the mines, and who for their services receive no remuneration. The books of these mines can at any seasonable time be inspected at the purser's office by the shareholders.—*Tavistock, Sept.* 15. WM. EDISTON.

## CORNISH MINE MEETING DINNERS.

SIR,—In last week's Journal Messrs. Watson Brothers very properly draw attention to this matter which, I think, in many instances may fairly be termed an abuse of mine management. It would appear that at each mine meeting there is a dinner at the expense of the particular mine for which the meeting is held, and this irrespective of whether the mine has been making a profit or worked at a loss. It may, and no doubt is, very pleasant for the purser to meet and entertain three or four times a year a number of his "Knife and Fork" shareholders who happen to reside in his locality at the expense of the great body of the adventurers, but it is hardly what might be called fair play, more particulary if at a previous part of the meeting a call has been made to keep the mine going. If these Cornish mine dinners must be given at each meeting, I would suggest they should be contingent on there having first been a dividend earned and divided amongst the shareholders. FAIR PLAY.

*Sept.* 13.

## EAST WHEAL ROSE.

SIR,—I see in the Supplement of the Journal of Sept. 4 a letter from Mr. Symons, Truro, relative to East Wheal Rose Mine, Newlyn East, wherein he speaks of and suggests the plan for opening out and re-working these mines. Supposing any company should contemplate doing so he says that a new shaft must be sunk, he thinks, 200 fms. so as to get under all the old workings, and also says it would not do to reopen the old levels. (Question: Why not?) There is an immense lot of lead in nearly all the old stulls, and where there was any hard ground, although good lodes of lead in sight, it was left there, as at that time they would not give tribute enough for anything like hard ground, and there it is standing to this day. I know scores of places in that run of mines where the ground was what we miners call "quick ground"—that means fair running ground—and large runs occurred in fine courses of ore, and there that still lies also. So I again ask, Why not clear the old levels and take away this ore? There is nothing that I can see to hinder this being done. Mr. Symons seems to say 200 fms. has to be sunk before any retnrns can be made; it is nothing of the kind. There are two ways to open out East Wheal Rose Mine, and to let down the water gradually, and at the same time be raising ore from the old workings to meet the cost. There is a moderate good mine in the old workings alone, and the bottom of the mine is still good.

It may be asked now, How does the writer of this letter know all this? Well, I will answer that question. I worked in the above-named mine for nearly 14 years on tutwork and tribute, but chiefly the latter, and I know almost every foot of the mines. I was underground there when the water broke in, and was one of those who, through God's good Providence, was saved: although having to climb against a shaft full of water. I am the man that stuck to Capt. John Champion and brought him up safe from the 50 (Purser's engine-shaft). I was selected out of 800 men in that mine to take an agency in Devonshire, and about nine months before East Wheal Rose finally ceased working I was employed by Messrs. Hodge and Hocking, bankers, of Devonport, to inspect these mines for them. I was three days hard at this work, and I wonder to this day whatever induced them to stop the mine, as there is not a shadow of a doubt but it is still a rich mine if properly managed.

As to the other mines named in the locality of East Wheal Rose, and not having paid, this is not to be wondered at, for most of them are nothing but "scratched," as we term it, and not worked. At that time everyone that could was trying for new mining setts; but what was that for? My answer is to get promoters' money, and the mines and minerals might go where they liked after the parties had pocketed the cash; but I know some of these mines, if properly worked, and economy used, would turn up trumps.

Now, by the foregoing it will be seen that for 14 years I knew all about this mine, and it also happened, as will be observed, that I inspected it not long before it was closed; and, in conclusion, I beg to state I do not think there is a man now living that knows East Wheal Rose Mine better, if so well, as I do, and if any parties wish any information regarding it, I shall be most happy to give it.

*Oola, Sept.* 8. JOHN PHILLIPS,
Manager of Oola Hills Mines, Co. Limerick, Ireland.

## WHEAL UNY.

SIR,—So I see by last Saturday's Journal that Captain Rich has resigned his situation as manager of the above-named mine. Brave and honourable resolution! It would seem from Capt. Rich's statement at the meeting that his proceedings in connection with the mine had been censured, that he has been surrounded by a set of traducers who have sought to injure his reputation; this is bad; but amidst all, sorely and keenly as it may be felt, why does Capt. Rich complain? He has neighbours' fare; he has been treated only in accordance with the general custom, has suffered only that which, under similar circumstances, has frequently been inflicted on many of his compeers, whose only crime, like his, has been that of having the misfortune to have a poor mine, The best miner that ever entered the bowels of the earth, and who has done all that human energy, skill, and abilities could have accomplished, when he is so unfortunate as to have to contend with a poor mine, is treated in the same way. Capt. Rich only participates in the common lot. Whilst his bal is rich the manager is a perfect Solomon, the very essence of wisdom; is respected and treated as a nonsuch, is flattered and caressed by all; but as soon as it becomes poor he, poor man, becomes a fool, his services are no longer required. To allow a bal to become poor were "a heinous crime; yea, an iniquity to be punished by the judges." The manager, therefore, should, under no circumstances, allow it to take place. From what I can see by the report of the Wheal Uny meeting, Capt. James, who acted like a reasonable man and a miner, was the only one who spoke who knows one iota about a mine or mining. Captain Rich said he had done his best; that he had received no bribe, nor had he defrauded any man. I do not know Capt. Rich, but from what I have heard of him I do not think that he has defrauded anyone; but can this be truthfully said by or of everyone with whom he has come in contact? Did he never see a man so steeped in disgrace and iniquity as to be destitute of all sense of delicacy and of shame? I rather think that he has. It has appeared to me for a long time past that Wheal Uny has been in a declining state of health; is it not, therefore, worthy of consideration as to whether it would not be well to entertain the suggestion of your correspondent, Mr. Symons, of Truro? Either this or put the management of the mine into the hands of Mr. Permewan. JOHN LEAN.

*Sept.* 14.

## MINING SHARES—PROMISING SPECULATIONS.

SIR,—There seems at present to be a desire of buying up low-priced shares, in anticipation, of course, of a rise in their value; but speculators, and investors too, seemingly have overlooked many good progressive mines. Take, for instance, the Nerbudda Coal and Iron Company—2*l.* 2s. 6d. paid—now quoted about 7s. 6d. per share, and the "mine never looked so well as at present"; then there is the Lady Bertha Tin and Copper Mine, generally considered to be a very promising undertaking, situated in the best locality in Devon, and near the celebrated Devon Great Consols, these shares are 12s. 6d. each, call paid; and many mines there are of which a deal has been written, and now quoted at 100 per cent. premium, which intrinsically are not worth so much as the shares of this company. The Canadian Copper and Sulphur Company: Very satisfactory accounts have been received from this concern, and the 4*l.* shares can be bought for 30s., or less. Surely these are tempting properties, all limited liability, not puffed up, or if they were the shares would not now be procurable at such prices. N. W. B.

## BELOWDA MINE.

SIR,—How wonderfully different are the opinions of men concerning the character of things! Not long ago a mine agent of reputed ability was employed to report on Belowda Mine, in the Parish of Roche, and he submitted a report to the effect that it would not pay. Only a few days ago a professional man, of first-class chemical talent, was employed to inspect and report on the same property. He is an analytical chemist, and when I give you his name you will receive his evidence as unquestionable—Mr. J. H. Collins, F.G.S., of Truro. He took samples from the three openings on the Beacon Burrow lode, and found the average to be 23 lbs. of tin per ton of stuff. This is in excess of the average yield of the tin lodes of Cornwall, and the quantity available being unlimited, the returns after the stamping-mill is set in motion must be very considerable, and profitable to the company. A report from such an expert as Mr. Collins must nullify any statement from an agent who knows nothing of science. More in a future letter.—*Truro, Sept.* 16. R. SYMONS.

## SOUTH POLGOOTH MINE.

SIR,—This mine is situate westward from the celebrated Great Polgooth at the distance of half a mile, and has the same lodes. I was informed to-day that since the suspension of underground operations there 1000 tons of black tin have been taken out of the "leavings" and above the adit level, which fact indicates the late richness of the mine. South Polgooth, which I visited to-day, furnishes evidence that at an early date considerable returns of tin will be made. The lode recently cut through is 14 ft. in thickness, and the contents from the samples taken in my presence will yield about 10 per cent. of black tin on an average. This is at the 10. From a lode of such a size the output will be almost inexhaustible from this lode alone, but there are others. What is wanted is a stamping-mill for reducing the ore for dressing, and such a mill is now being erected. The main beam is in its position, and the appurtenances are all in readiness for their places, and the engineer is using all diligence in preparing the machine for the execution of its work. Shortly afterwards large returns of tin will be sent to market, when the mine will speak for itself. Meanwhile a six-headed stamps is at work, from which some tons of tin may be expected in two or three weeks. As was said in a late newspaper, two heads of the same stamps (water being scarce) stamped in three weeks tin-stone which yielded, after dressing, 53*l.* per ton at the smelting-house. The Charlestown smelters said that the quality was the best in Cornwall. Capt. T. Parkyn, of Finsbury House, Roche, is the manager and joint proprietor of this mine, whom I congratulate for having such a property on which to operate. R. SYMONS.

*Truro, Sept.* 16.

## LADY BERTHA MINE.

SIR,—While on my holiday tour in Cornwall and Devon I took the opportunity of going to this mine, and was very courteously shown over it by Capt. Neill, agent of the mine. I was very well pleased indeed with my visit, and found all the surface operations being proceeded with vigour, and every advantage taken of the fine weather. The water-course or leat (as the Devonshire folks call it) for conveying the water from the River Walkham to the water-wheel, in length about four miles, has been thoroughly cleared up and made good from end to end, and the water is now being brought to the mine by this course for the use of the masons. The wheel-pit is all but finished, and I see that a large quantity of pitwork and machinery is already on the mine, and I understand the remainder is in a forward state, and will be delivered by the time the wheel-pit is up. From the fact that this comparatively shallow mine has returned over 30,000*l.* worth of ore alone, and since the mine ceased working the burrows have been turned over several times and many thousand tons of mundic taken out and sold, is a positive proof that we have in Lady Bertha a thoroughly good concern; and I have every confidence when the water-wheel is started and the water pumped out (which I am told will be before the end of October) that our shares will go to a considerable premium. I understand when the mine was last worked mundic was neglected as being comparatively valueless, and not more

brought to surface than was absolutely necessary, and large quantities were left underground. Mundic now being in demand at good prices, from this source alone we may reasonably expect (judging from the reports) that the mine will make large returns.

*London, Sept.* 16. ANOTHER SHAREHOLDER.

## WHEAL CREBOR.

SIR,—Whatever may have been the intention of Mr. Thomas Trewarth's letter on this mine, if it was as supposed by some its depreciation in the "bears" interest, it has certainly been most successful so far. Although to all outside observers the mine would seem to have greatly improved, yet the shares have regularly gone down, and now stand at 35 per cent. lower than before the appearance of his letter. The "bears" seem indeed to be having it all their own way, and the "bulls," as if taking their stand on the ultimate merits of the adventure, seem to have given up the contest in scorn. But how is it that we find philanthropy thus so strongly manifesting itself, as in the aforesaid letter, and in others that we hear of as sent anonymously to shareholders warning them against the mine. Those who have had experience of the world must be pardoned if they doubt the reality of such philanthropy, and ascribe it rather to interested motives. Why are not such warnings sent to the holders of shares in really doubtful mines? I can only say that I have held large numbers of shares to my sorrow in a great many worthless mines, but not in one single instance have I ever received any such warnings from philanthropic individuals. The conclusion is unavoidable. Such kind admonitions are simply to frighten holders out of their shares. Underneath the sheep's clothing we see the wolf.—*Sept.* 15. A SHAREHOLDER.

## CHINA-CLAY.

SIR,—Cornwall has contributed, probably, more than its quota of authors of literary works on the various branches of natural science and the arts. We have had our historians, archæologists, engineers, chemists, statuaries, theologians, politicians, &c., and now we have the production of a mining engineer of extensive experience, who has written from practical knowledge, and published "A Treatise, Technical and Practical, on the Nature, Production, and uses of China-Clay, with several useful Tables and Statistics," and other information bearing on the subject. The author is Mr. David Cock, of Roche, near St. Austell, who has compressed into 151 pages an amount of information on the subject which some verbose authors would have spread over 300 pages. The author's obvious intention was not to make a large book to sell at a high figure, but to convey within as few pages as possible all that could be of interest to persons interested in china-clay production and its uses. In this intention he has succeeded most admirably. "*Multum in parvo*" is a motto which he appears to have steadily kept in view from beginning to end. The work shows an intimate acquaintance with geology, which is so closely allied to his subject; and to this he has devoted the first 22 pages. Chapter 2 is entirely practical—"Prospecting, trial pits, testing clay, opening a new work, the shaft, drift, and rise, water supply, clay stopes, pumping clay, drawing the sand, micas, settling pits, tanks, and the dry." Chapter 3—"China-clay in the arts and manufactures, pottery, practical recipes, patents, paper manufacture, sizing cotton, manufacture of alum, ultramarine making, copying ink pencils, crayons, water colours, india rubber, and soap." Chapter 4—"Chemical key, chemical cements, the three states of matter, silica, silicon, and oxygen, alumina, miscellaneous analyses, statistics of china-clay, approximate freights, foreign money, china-clay, and mechanics; horse-power of horse-whim, water-wheel, steam-engine, steam, pressure of steam, heat, consumption of coal per horse-power, the inclined plane, tensile strain of ropes (round and flat), chains, pumping clay, weight of clay."

The above headings will give your readers some idea of the comprehensive character of the work, and of the vast amount of labour involved in its preparation. It does him great credit, and I hope that an extensive sale will in some measure, at least, repay him for his devotion to the work. It is a "hand-book" which every one in any way connected with china-clay should possess. R. SYMONS.

*Truro, Sept.* 14.

## MINING IN BREAGE.

SIR,—Breage is one of the parishes in Cornwall distinguished for its mineral products, particularly of tin. Although during its last working Wheal Vor was a losing undertaking, it yielded to Messrs. Gundry and their successors a profit of 272,000*l.* out of two million pounds worth of tin returned. The last working was an error, like that of Godolphin, which to the first workers—Messrs. Williams and Co.—yielded nearly 100,000*l.* in dividends from copper ore, but the last working resulted in a heavy loss.

No one of common sense who knows Wheal Vor would entertain for a moment any desire to expend his money in re-opening the mine, which would not pay its working cost after all the machinery for drainage, &c., is *in situ*, and that would cost about 70,000*l.* For the last working the plant and preparatory works cost over that sum. But there are several stanniferous lodes of parallel strike and inclination only a short distance north of Wheal Vor main lode—all within the land of Mrs. Popham. The nearest lode is called Trueman's. There are four other lodes, which were slightly worked with Polladras Mine by the first Wheal Vor Company, when tin ore (black tin) was at about 35*l.* per ton. On one of the lodes, a little below the 50 fm. level, about 12,000*l.* worth of tin was raised in a very limited extent; that lode is whole above and below that level. Trueman's lode has long been an object of desire with mining men, being deemed highly deserving of a spirited development. Wheal Vor main lode underlies into Mrs. Popham's land at about 250 fathoms below surface, but I am not aware that Trueman's lode has been touched, except a little under the surface. All the lodes discovered in Breage were opened on the backs by the "old men," as the very ancient workers are called, of which lodes there are seven or eight in Polladras. Polladras Mine was stopped about the year 1830, or later, by Wheal Vor Company, when tin was very low, and because they had abundance of it at Wheal Vor, Penhale, Poldown, and other places to enable the manager—Mr. R. Tyacke—to send to market about 10,000*l.* worth monthly. This mine, as I said in a former letter, would pay for re-opening. This sett in Polladras was called No. 2, and Trueman's No. 1, being distinct leases from the late Mr. C. Wallis, grandfather of the late Mr. C. W. Popham.

Some miners say that Wheal Metal ought not to have been stopped, and so they said of Wheal Vor. Do not believe them. There are several other good sites for mining in Breage, of which I may speak in another letter, but there are none so eligible as Trueman's and Polladras Downs. The junction of granite is near, and so is a great cross-course, near to which Wheal Vor, Godolphin, and Great Wheal Fortune made their riches.—*Truro, Sept.* 14 R. SYMONS.

## LEAD MINING IN LLANARMON.

SIR,—The agent at the Lady Ann Mine writes on the 9th nst. as follows:—

"I have the pleasure to enclose you receipts. You will be glad to hear that appearances for lead ore are gradually improving, though the vein on the hanging is not quite so wide, being from 6 to 8 in. from the roof half way down, and about 15 in. from this to the bottom, and it is a little stiffer than it has been, all of which may arise from our being near the heading, and which I think is likely to bring us an important favourable change soon. They have had ore every stem since I was last up, and there was ore in the two places yesterday the size of a cobnut, about 12 in. between and about the middle of the level."

I have now the great pleasure to give copy of Capt. Parry's report on the Lady Ann Mine, which is dated—

*Pant-y-Mwyn Mine, Mold, July* 28.—I carefully inspected the Lady Ann Mine on the 29th ult., and in handing you my report thereon allow me to congratulate you upon the choice of a mine sett in a good mineral district, and the whole of which is in the lead bearing measures of the district, and through which several well defined and lead producing lodes run longitudinally, as well as a strong cross-course, which shows several feet of carbonate of lime at surface. This cross-course crosses the lode nearly at right angles near the middle of the sett. The above are the points we miners like to find existing together, as they do in this sett.—Westminster Lode: A trial shaft has been sunk here 15 fms. deep from surface, and a level is being driven eastward from the bottom of this shaft. The lode shows a little lead ore in the sinking and driving, and it is very satisfactory to see the improvement in the general appearance and size of lode in this sinking. Near the bottom of this a feeder has come into the lode, which has contributed to its size. Then there are the old lode and the Pant-y Gwlanod lode, both of which show themselves strong at surface. Some trial pits have been made on both of them, but it has only been just scratching the surface. On one of these two lodes, and just outside your boundary to the west a shaft has been sunk, and the lode is worked away by opencast up to surface, which is evidence that lead ore was found in paying quantities or they would not have worked it. Some attempt has been made to meet the dip of the said ore in your sett, but for some reason they stopped short. There can be no question as to its really dipping into your ground, for the dip of it is plainly to be seen in the open cutting. A shaft has been sunk on the Pant-y-Gwlanod lode near to your eastern boundary to about 20 fms. deep, and I would strongly recommend the sinking of this shaft down to (say) 40 fms. deep, and then drive a level west on the course of this lode, in the bottom, and drive cross-cuts from the said level in order to prove the other lodes, as it is clearly seen that there is the outcrop of one run of lead ore to the west, and more are likely to be found in that direction. Thus you will see by driving west from the eastern part of the sett you will have every chance of catching the runs of ore which are dipping to meet you. The ground appears to be very dry, so that you can work to a considerable depth without steam-power for pumping. I have no doubt but you have full particulars of the yield of the adjoining mines, and, therefore, there is no need for me to enter upon that point. In Lady Ann you have a fine piece of mineral ground, in which considerable development can be done with a comparatively small capital. I would advise you to well consider the best and cheapest plan, and if at any future time I can serve you shall be glad to do so. I can highly recommend this sett to capitalists. ENOCK PARRY."

At present I do not wish to say more than that the Lady Ann Silver-Lead Mining Company was registered on the 8th inst. as a limited company, in 15,000 shares of 1*l.* each. The directors and officers of the company have a very high opinion of the property, and their efforts are likely to be soon rewarded with great success in its becoming an exceptionally productive sett. ENQUIRER.

*Sept.* 14.

## REPORT FROM CORNWALL.

*Sept.* 16.—This is a very barren week, with really nothing of current interest to comment upon beyond the one absorbing question of the prospects of the tin standards, upon which every other mining man one meets seems to have more or less of a different opinion. True the pessimists are in a very small minority who do not believe that better days are in store. But there is every variety of opinion as to when the good time is to come, and the worst of it is that not a few of our prophets of retardation have it in their power largely to influence matters their own way. The work is too often "father to the thought" on the unpropitious side, as on the propitious. For our own part, however, we see no reason to waver in the faith we have again and again expressed, or to recall the advice we have again and again given to holders of good shares not to be frightened out of them by these speculative fluctuations.

There is a good deal more quiet progressive work going on in mining matters than is easily apparent on the surface, or is at all discernible by a cursory glance, and in this way the foundations are being laid, to all appearance, of a wide-spread future prosperity. The evidences of this are not to be found only in the declarations of dividends, in the large and steady reductions of adverse balances, in the general improvement of practical methods and their more economical results, or even in the extension of area involved in the opening of new mines, or the reworking of old ones. There is, beyond all this, distinctly apparent a more hopeful and a healthier tone manifest in all matters connected with mining concerns, and we believe that the next half-dozen years will probably be the most productive of important progressive results to mining than any similar period of the past.

It will be important by-and-bye to know what the result of the experiment at St. Just United with Sholl's Pneumatic Stamps may be. The old-fashioned gravitation stamps have held their own against so many assaults that we believe a good many mine agents are inclined to regard their position as impregnable. Our view is a very different one, and we hope that the step taken at St. Just may aid in the solution of what is really a very important problem. It is not a question of pneumatic stamps against water stamps, which would be most economical if they could do the work and were always available; but of the economical application of steam-power to stamping purposes—and this is the point which is most commonly overlooked—Sholl's stamps have shown that they can do good work; and if St. Just United will only give us the exact figures of cost of working and work done (say) over a quarter a great boon will be conferred upon progressive mining.

The joint Explosive Committee, whose report was discussed at the recent meeting of the Miners' Association, have held a meeting and subjected their report—which was then, in fact, only in the condition of "proof"—to a very careful examination. After a thorough discussion a few alterations were made, and it was decided that 1500 copies should be printed and circulated. The meeting of the committee was a fairly large one, with Capt. Williams, of Wheal Eliza, in the chair, and fully representative of the various societies and interests involved. A practical proof of the need of the fullest examination into the whole of the subject, from the sanitary and safety as well as the economical side, is again supplied by a mysterious explosion at South Crofty, where two men were injured while boring before they had sunk more than 1½ in. The only suggestion made is that they came across some unexploded dynamite, but this hypothesis needs explanation and investigation also.

## REPORT FROM DERBYSHIRE AND YORKSHIRE.

*Sept.* 14.—Affairs in the mining districts of Derbyshire have not much changed of late, and, as a rule, they are dull, there being but few exceptions. In the lead districts business is still quiet, and, no doubt, will be so as long the existing mining rules or laws are in force, for they appear to hold out inducements to working men to open out ground on their own account, and work it in the most primitive and, consequently, the most unprofitable manner, so that capitalists are kept back. Experience has shown that lead mining can only be profitably carried on with capital, and of this we have a notable example in the person of Mr. Wass, who single-handed raises more lead ore then all the other mine owners in the county. Coal mining has also been very unprofitable of late, and most of the mines are said to be working at a loss. This is more particularly the case with respect to those that were purchased or opened out during the excitement in 1872-73, when fabulous sums were given for small concerns that would not now realise one-tenth of the amount they were sold for. The business doing with the Metropolis in house coal appears to have fallen off of late so far as regards Clay Cross and other of the leading collieries in the county, whilst the price obtainable are below the paying point. The consequence is that at several places the wages question is cropping up, and will have to be taken into consideration by the miners if they are to continue at work, for small as the remuneration is employers cannot be expected to go on losing large sums of money week after week for the mere purpose of keeping bodies of workmen employed. The Iron Trade has undergone but little change of late, so that there has been a steady production of pig, with a fair demand at full rates. The steel rail works have been doing well, and prices consequent on the advance of hematite pigs have gone up considerably of late.

In Sheffield business in most branches continues brisk, and there is every appearance of its doing so to the close of the year. The mills have been running well, especially on plates and sheets, whilst there has also been a fair output of telegraphic and other wire, as well as bars and ordinary qualities of merchant iron. Not much is being done in armour-plates of the old type, some few orders in hand being cleared off for our own Government, whilst as yet orders have not been given out for what may be termed the "new pattern" of armour known as composite plates made of steel and iron. The Bessemer Works are busy, more especially in rails, the demand for which appears to be increasing more than otherwise, whilst prices are about 30s. a ton more than they were a couple of months ago. But the advance, it may be said, is not a local one, but has been participated in by the makers in the different parts of the kingdom. The cutlery houses have been kept fairly going on foreign account, the home demand being still quiet. In crucible steel there is more being done, but the works are not putting out their full strength. Machinists and engineers are by no means busy, and the same may be said with respect to file and saw makers; on the other hand, however, steel tool makers and forgers of sheepshears have been doing well.

Throughout South Yorkshire the Coal Trade is still particularly dull and unprofitable, so that in most of the districts the collieries are being carried on at a serious loss. House coal in particular sells very slowly, and in all markets the competition for what trade there is is very keen. Finer households are being sold at less than 7s. per ton, and the Thick seam at less than 6s., so that profit, it will be seen, is out of the question. At several places notices of reduction of wages have been given, and there is no doubt the men will have to submit. At the Stubbin Colliery, belonging to Earl Fitzwilliam, the men struck for about a day against a new machine for ruddling the slack from the large coal which had been put down. His lordship was willing to pay full price for large coal, but not with an admixture of 12 or 15 per cent. of slack.

The strike, if such it can be called, at the Monk Bretton Colliery, continues, this being the 51st week. The men will not be put on in a body, but single applications from individuals are received. So far as the owners are concerned there is consequently no strike.

MINERS' CONFERENCE.—A Conference of the delegates connected with the South Yorkshire and North Derbyshire Miners' Associations and two other associations was held at Barnsley, on Tuesday. There were 83 delegates, representing 30,000 men. The conference was adjourned to the 29th inst., after the following resolutions had been passed:—

"That this meeting, which is composed of representatives of all the miners in the districts of South Yorkshire and North Derbyshire, is decided in its opinion that nothing but a thorough re-organisation of the whole body of miners composing the districts of South Yorkshire and North Derbyshire in dealing with the question of wages and reductions would help us to a solution of the labour question difficulty."

"That in the opinion of this conference the time has now arrived when the three districts composing South Yorkshire and North Derbyshire should join and form themselves into one grand union for the better protection of both life and labour, seeing that isolation means weakness, but union means strength, and that the principle on which it should be worked or governed shall be an after consideration by a committee appointed for that purpose; further, that a committee of nine persons be appointed to consider the matter."

"That this meeting pledges itself to do everything that lies in its power to induce every miner and pitman in the South Yorkshire and North Derbyshire district to carry out the eight-hours system of working, and to impress upon the men at every colliery upon no consideration to work any longer, because by doing so they are working to glut the market and to bring down the wages."

"That the conference pledges itself to support all men who are out on strike against the reduction in wages, and that we consider undue advantage has been taken by the empolyers."

## TRADE OF THE TYNE AND WEAR.

*Sept.* 15.—There is not much change in the position of the coal trade; there is a fair demand for steam coal, but the most brisk demand is for gas. The shipments of coal on the south side of the Tyne during the past week have been above the average. A new company has been formed in Northumberland, to be called the Woodham Coal Company, for the purpose of acquiring the lease of the seams and mines of coal under the Woodham estate, near Morpeth, capital 100,000*l.*, divided into 1000 shares of 100*l.* each. The first subscribers are Messrs. Lambert, Mr. R. N. Byass, Mr. R. W. Cole, and others. The position of the royalty is very good, being in the centre of the best steam coal in the district. The North Eastern Railway Company have at length taken up the matter of the improvement of Blyth Harbour and the formation of railways, so that all the docks north and west of Blyth will no doubt in time ship their coal at that place The work of improving the shipping places has already been commenced. The Seaham Collieries, closed by the explosion, have heavy contracts in hand for gas coal, &c., but these will be supplied from Silksworth and other works belonging to the Marquis of Londonderry.

The iron trade has been dull during the week, and there has been a marked downward movement. No. 3 is quoted at 40s. Buyers are not numerous; the shipments have been smaller. The heavy production in Cleveland, and the lighting of some of the furnaces in Scotland have had some effect in causing this depression. The manufactured iron trade is also quieter, but there is not much change in prices. Messrs. Bolckow and Vaughan have started the two 15-ton converters for making steel from Cleveland iron. The quality of the steel, or more properly ingot iron, has given much satisfaction, and this will be proceeded with on a large scale. The extension of their mill plant in the same works is making rapid progress, and will be available in a short period, when it is expected that they will give the scientists of the iron trade an opportunity for inspecting the whole concern.

THE SEAHAM COLLIERY EXPLOSION.—The sad disaster at Seaham Colliery has produced a great impression in the district. The explosion has, without doubt, been one of the most violent on record, and the number of lives lost is very serious. The work of rescuing the men alive was one of the most arduous character, owing to the great injury done to the shaft gearing, which rendered it impossible to get the cages to work. The skill and judgment, the perseverance and courage, of Mr. Stratton, the viewer, aided by the under officials and shaftmen, has given much satisfaction. For nearly three days Mr Stratton was at work incessantly, engaged either in consultations of engineers on the surface, or examining the shafts and workings, &c. So far the work has been done, and the men alive rescued by means of kibbles. Many of the bodies have also been brought up, and part of them burried on Sunday. The work of clearing the shafts and replacing the guides, &c., was still going on on Monday, but some time must elapse before this is accomplished. There was great difficulty and danger from fires, which occurred near the shafts, in the stables, and engine-house, but those fires have been subdued, and there is no danger now from that source. Little progress has as yet been made in penetrating the workings, as the ventilation is comparatively weak, owing to the ventilating furnaces being out, and gas is met with at a short distance from the shaft in the roads, Progress has also been much retarded owing to the occurrence of heavy falls of roof. The problem to be solved now is the relighting of the ventilating furnace. A long consultation was held on Saturday of the most eminent engineers of the trade in the district of the colliery office. The point under consideration was whether it would be prudent to relight the furnace of No. 3 shaft so as to be worked by fresh air. Various suggestions were made and opinions expressed, but no decision was arrived at, and the council adjourned to meet again early this week. The Home Secretary arrived at the works on Saturday, and Mr. Bell, the Inspector, explained to him the nature of the coal seams and the mode of working, &c. Mr. Bell explained to him that he considered this one of the dangerous pits in the district, as a good deal of gas was given off. At present the nearest gas to the shaft is 150 yards in the No. 3 Hutton seam. The other portions of gas nearest the shaft are in No. 1 Hutton seam, and are from 450 to 500 yards from the upcast shaft, with intermediaie currents of air. Those points of danger are effectually protected by currents of fresh air circulating between them and the shaft. He estimated the ventilation at nearly 100,000 cubic feet per minute. Sir W. Harcourt suggested modes of working extensive coal fields, and said he thought that a larger number of shafts would be desirable. Mr. Stratton also had an interview with the Home Secretary, and he highly complimented Mr. Stratton on his courage and energy.

The shafts at these works were sunk 40 years ago by the North Hetton Coal Company, under the direction of the late Mr. Nicholas Wood; five seams of coal were found—the Main coal, Maudlin seam, Hutton seam, Harvey and Busty seams, the total depth to the Busty seam being not far short of 300 fathoms. The first four of these seams were worked when the explosion occurred, and most of them have been worked very extensively; the working in the Maudlin and Hutton seam extend from two to three miles from the shafts. The explosion occurred, there is little doubt, in the Hutton seam, which is the most fiery seam in the series; and as the Maudlin and Hutton seams are on one level in the approach to the shaft, owing to the occurence of a fault, both seams are exposed to the violence of the explosion. The Main coal seam being considerably above the other seams, and the Harvey being below, the men in these seams escaped the effects of the fire, although they felt the wind caused by it, and it was in these seams that the men escaped nearly unhurt, but those in the Hutton and Maudlin seams have not only been killed but mutilated in a most shocking manner, a result certain to take place when an explosion occurs in a mine when there is such a large ventilation, and airways of very large size. Each of the seams was ventilated by a separate split, and also each district in the seams in the same manner.

This explosion appears to upset a theory which has been advanced by Sir Geo. Elliot and others respecting the amount of gas given off at various depths in thin coal measures; it has been held that beyond

a certain depth the gas given off decreased, and that when 300 fms. was reached the quantity of gas given off was comparatively small. Possibly the case may be an exception at Monkwearmouth, and the other deep collieries on the coast in Durham and Northumberland, the gas given off in the Hutton and Maudlin seams is, we understand, not large. It was considered that there was a zone at a certain depth, put, we believe, at about 200 fms., and that above that zone the gas given off was in many cases large, but that below this it was comparatively small, but this case certainly appears to upset the theory.

Great exertions have been made to get the shafts cleared, but they have caused much trouble; the No. 1 pit is in charge of Mr. William Coulson, of Durham, who expected to have the cages at work by Tuesday night. When this is accomplished the further explorations of the men and recovery of the bodies will be rapidly proceeded with. A consultation of engineers was held on Wednesday, Mr. G. B. Forster in the chair. The committee consists of Mr. Lindsay Wood, Mr. Bell Armstrong, Richard Forster, W. F. Hall, W. O. Wood, Joseph Smith, William Lishman, John Daglish, E. F. Boyd, R. S. Johnson, Mr. Willis, and Mr. Bell, Inspectors. It was stated that the condition of the mine as reported by the officials was the same as on the previous day, the ventilation being sufficient to keep the gas and after-damp in the same position as before. It was resolved that the plan submitted of the arrangements for restoring the ventilation by lighting the furnace be approved, and the work to be pushed forward with all possible dispatch.

With respect to the cause of the explosion, no opinion has been expressed as yet; it is, indeed, impossible to form any opinion on this point until the extensive workings which are situated in the Maudlin and Hutton seams have been explored, and this will, under the most favourable circumstances, occupy some time. The circumstances connected with all explosions are extremely painful, but in this case they are peculiarly harrowing. In one case a poor woman has lost five sons and her husband. Ten of the members of the Seaham band are amongst the dead. The funeral of Corporal Hudson, of the Volunteer Artillery, took place on Tuesday; he was the winner of the Queen's prize—a gold cup—at Shoeburyness in August last.

It is a most fortunate circumstance that all, or nearly all, the men at these works are members of the Miners' Permanent Fund; the consequence is that the survivors are nearly independent of charitable aid. Mr. Blyth and other officers of the fund attended there on Saturday, and had provided 12,000*l*., and a considerable sum was paid on that day. The total loss of life is 164, and there are 105 widows and 382 persons in all left dependant. The cost to the Permanent Fund is expected to be about 22,000*l*.

## REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

*Sept.* 16.—The consumption of furnace and forge coal is increasing consequent upon the steady addition which is taking place to the furnaces in blast and to the augmented business doing at the manufactured ironworks. Yet the supply continues largely in excess of the demand, and prices are low. The railway demand is not brisk, but the orders for household sorts, mined chiefly on Cannock Chase, is beginning to improve a little in view of the coming winter, with the result that prices are somewhat firmer. The pig-iron market this afternoon and yesterday in Wolverhampton was, as regards all but best sorts, weakened slightly by the lower prices prevailing in the North of England. Cleveland forge pigs of good quality were quoted by makers' agents at 2*l*. 15s. per ton delivered into South Staffordshire, but from merchants supplies have been got at from 1s. 6d. to 2s. 6d. per ton within this figure. Staffordshire cinders pigs were obtainable at 2*l*. per ton. All-mine pigs were fairly strong. The make of Messrs. Hickman and Son were quoted at 3*l*. 2s. 6d., but superior makes of other firms could not be had for less than 3*l*. 7s. 6d. to 3*l*. 10s. Welsh hematites were occasionally to be purchased at 3*l*. 15s., although Barrow hematites were 4*l*. Finished ironmasters reported themselves as generally active. The "list" bar houses are, however, quiet.

Mr. James Cope, mining engineer, Wolverhampton, was found dead in bed on Tuesday morning, although upon retiring on the previous night he was apparently in his usual health. The deceased gentlemen was about 70 years of age, but was very robust, and apoplexy is believed to have been the cause of his death. Mr. Cope was the owner of the Vicarage Colliery, Wednesbury, and was the mining agent of the property at Bradley of Lady Emily Foley. He was a Fellow of the Geological Society, and had had great experience in the practical mining of the district.

At Hanley, on Tuesday, Mr. Greenwood, stipendiary, fined Mr. Enoch Perrins, colliery proprietor, 30*l*. and costs for neglecting to fence three disused shafts on his colliery at Bucknall. The prosecution was by the order of the Home Secretary.—By the Wolverhampton County Bench on Monday Thomas Challenor, charter-master of the Neachills Hall Colliery, Wednesfield, was summonsed under the Explosives Act for storing gunpowder without being licensed. Defendant formerly held a license, but it expired on the 28th ult., and on visiting the colliery on the 3rd inst. the Inspector under the Act found 208 lbs. of blasting powder stored there. Defendant said that he had forgotton to renew his license. A fine of 6d. per pound, in all 5*l*. 4s., and the costs was imposed.

The four men charged with defrauding the Chatterley Iron Company by an ingenious system of manipulating the wages book and wages "tallies" were committed for trial at the Staffordshire Assizes by the Burslem magistrates on Tuesday.

## REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

*Sept.* 16.—The slate quarries in the Corris district are working full time, and the Braichgoch Quarry has been re-started under a new name, and has already a large quantity of slates on its wharf at Machynlleth. Most of the other wharves are empty, or nearly so, presumably because the slates are transhipped from the Corris Narrow Gauge Railway to the trucks of the Cambrian Railway as fast as they arrive at their wharves. The Pendre Dhu Slate Quarry, to the north-west of this district, is also busy, and to the south-east also, at the Glandovey Slate Quarry, work is also being pushed forward, and slabs are already being sold. This is encouraging from so young a quarry. The lead mining prospects in the neighbouring Cardiganshire district are not quite so bright; and, although we hear much of the starting of new machinery, we hear but little of the shipping of any quantity of ore, although there are, and have been for many years, some fields of good machinery in the district. The Dyliffe Mines are troubled with their old complaint (water), having plenty of this below ground and but very little above ground. We have heard old miners say that is possible to drain these mines by an adit, and surely their past history would justify the driving of this, even if it should be a tolerably long one. The latest *on dit* with regard to the Cambrian Mines it that about six weeks ago some 50 tons of copper were sent off, but since then we have received no news of the shipment of either copper or lead ores.

"Enquirer's" letter, with its accompanying report, in last week's Journal are especially interesting, and we look forward to the further report promised, and trust that the progress which is being made, and which he acknowledges to the slow, may be sure and satisfactory also.

The North Wales Miners Permanent Relief Society is gaining ground, and extending its operations by means of local agencies in every direction. The return of members shows that on June 30 the number of members was 6656, which is an increase of 294 during the past six months. The number of widows on the fund on June 30 was 18, and of children 32, while the available balance was 2300*l*. We heartily wish this movement success, as indeed we do also to all other kindred societies whereby the terrible sufferings of those whose husbands and fathers are killed while winning our underground wealth may be alleviated.

The Potteries, Shrewsbury, and North Wales Railway is still completely at a standstill, and its permanent way is almost covered with grass and weeds. Some time ago an announcement appeared in the local papers of the intended sale of the stock, but no further steps seem to have been taken, and in the meantime the district is greatly inconvenienced.

The letter in last week's Journal signed by "An Experienced Gold Mining Engineer," deserves the attention of all mining men, and by substituting for the word gold the name of any other metal the letter will apply generally to most mines and mining. "Barytes," and the letter signed "E. Bevan," will receive my attention at some future date.

## REPORT FROM NOTTINGHAMSHIRE.

*Sept.* 16.—A steady business continues to be done at the iron-works, and at Stanton there has been a rather large output of pig, which has gone off somewhat freely, both locally and otherwise. It may be said that the company now turns out an excellent quality of pig, suitable for almost any purpose, and use a good deal on the ground. The principal part, if not the whole, of the ore comes from Northamptonshire, and if well selected produces an excellent quality of pig, some of it yielding upwards of 38 per cent. of metallic iron. The foundries have been kept fairly going, without being what may be termed really active, and the same remark equally applies to the machine and other works. Like most of the other coal districts in the kingdom, business is anything but good; but, at the same time, so far as the trade to the South of England is concerned, Nottinghamshire has its full share, and that is what ought to be satisfactory. The Annesley Coal Company's colliery in the Mansfield district is an extensive one, and it is said that some powerful air compressing engines are now being made for the purpose of being placed on the surface for the underground haulage engines. A good trade has been done with the Metropolis by the company, and last month there was sent there by the Midland Railway 6400 tons of coal and about 2000 tons by other lines. The Babbington Colliery also sent several thousand tons to the same market, as did Teversall, Hucknall, Liskeard, Linby, and several other collieries. The proximity of the Nottingham coal field to the Metropolis gives it an advantage over most others so far as the railways are concerned. Mr. Thompson, however, in his scheme for carrying coal to the Metropolis, as well as to Paris, *via* Boston Deeps, has included Nottinghamshire, so that that important portion of the great Midland coal field will be greatly benefited should the scheme be carried out, of which there appears to be every probability. Steam coal has gone off tolerably well of late, but prices still rule low. Some of the land-sale pits have been doing what may be termed a steady business, but not equal to what they could do, so that the collieries are working short time, and are likely to continue to do so.

# Meetings of Public Companies.

## WEST FRONTINO AND BOLIVIA MINING COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, Southsea Chambers, Bishopsgate, on Tuesday, Lieut.-Colonel FEILDEN in the chair.

Mr. G. C. HARVEY (the secretary) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, I am not surprised at there being only a small attendance at this the first meeting of this company, as we have really very little information to give you with regard to the company; at the same time, what we can say on the subject is highly favourable. We are merely holding this meeting as a formality, in accordance with the statute, which requires us to hold a meeting within four months of the time of registration. We are not in a position to give you very much information with regard to the mine, except that we have just received the title deeds from Capt. Goyen's son; but we have been obliged to send them for translation, as they are in Spanish; and, although we have expected them to-day we have been disappointed, and we are not likely to receive them for another three or four days, but we have every reason to suppose that they are quite in order. After receiving that translation they will be submitted to our legal advisers, Messrs. Griffin and Quayle, and a proper assignment drawn up, which, I have no doubt, will be duly signed by Capt. Goyen, who holds a power of attorney from his son, who is the nominal and, I suppose, the real possessor of the mine; and then everything up to that time will be complete, and the property will be ours. I need scarcely mention that at this stage of the infancy of the mine all we have been able to do is to remit certain funds abroad for the working of the mine, and likewise request the Messrs. Restreppo, of Medellin, to act as our agents for the mine. We are sending out funds by each mail, and we hope in a very short time to receive favourable advices from Capt. Goyen's son. We are sending out these funds for the purpose of erecting stamps to work the mineral; but for further information on this head, if you require it, I will refer you to Captain Goyen himself, who is present, and will be happy to answer any questions or give any further information that lies in his power with regard to the mine. I think on my own behalf I need not detain you any longer, but if you wish to ask me or any of the directors any questions we shall only be too happy to afford any information in our power. Perhaps you would like me to call on Capt. Goyen to give you a few explanatory remarks with regard to the mine. He has been there, and has seen the mine. I believe the country is most favourable for the development of its riches. It is well watered, well wooded, and there is everything we can require at hand on the spot for working and developing the mine.

Capt. GOYEN said he would be happy to answer any questions, or to give any information in his power beyond that which he had already given.

Mr. STEPHENSON: I suppose you have a favourable opinion of the property?—Capt. GOYEN: Yes, I should think it is second to none.

A SHAREHOLDER: The more stamps you have the more gold you will get?—Capt. GOYEN: Yes. My son had six heads of stamps working, and they would return a clear profit of 350*l*. a month. There is no limit to the number you can put up. There is a large quantity of water and timber at our command, and we shall go on increasing as we develope the mine. Of course everything depends on the development of the property.

Major FORTESCUE: The enormous distance that the property is from us is of course very much against us getting the reports quickly. We cannot get them for some little time to come, but there is every reason to believe they will be favourable when they do come.

Mr. STENSON: As I have had repeated interviews with Capt. Goyen I may say that the mine does not require any sinking, and, therefore, no water will have to be pumped. The run of the lodes, of which there are three running parallel to each other, is some distance apart. They run along the side of the mountain on the escarpment of the mountain. There are three headings or adits, as in mining language they are called, driven into the mountain level; and to each one there will be a small tramway to bring in the usual way the gold rock as it is excavated from what is called the forebreast of the mine. These three adits were some of them worked by the natives many years ago, the first of them being 80 fms. into the hill, another one from 60 to 70 fms., and the third about 40 fms. The yield of gold rock varies somewhat, but none of it has hitherto been found to yield less than ¾ oz. of gold to the ton.

Capt. GOYEN: An ounce and a half has been the lowest.

Mr. STENSON: Three-quarters of an ounce was fixed by Capt. Goyen, so as not to make any large display, but to avoid exaggeration and to speak well within practical facts, which are these. That about 1½ oz. is the lowest quantity that this rock has ever yielded in gold per ton. In some places they have extracted not only 1½ oz. but various weights per ton up to 6 ozs., that being the richest yield hitherto. Well, then, it is impossible at the present time to predict the exact average. The average can, of course, only be known by experience, but, at all events, we know nothing less than 1½ oz. per ton has been returned. I take ¾ oz. to be the minimum of the yield of gold; but the quantities mentioned are practical results, not the result of assays or selected specimens, but of actual working. Capt. Goyen informs us also, as you gentlemen I suppose have already been made aware, that the water running down the side of the hill has a large and accumulative stream from the upper portion of the moutain down to the outlet, and that it is sufficient to drive any reasonable or required amount of wheels for propelling the stamps. These wheels, with the stamps attached, form in reality the great, almost the only, machinery required, the rest being accomplished by the well known sifting process through blankets, chamois leather, and so on in the usual way, when not only is the gold finally extracted from the rock, but also a large amount of iron pyrites which is found intexmixed with the gold is also extracted. Gold can occasionally be seen in the rock—free gold as it is called, but for my own part I should not estimate it any richer from the gold being seen. I rather prefer—and the history of gold mines tell us—that the rock which contains a tolerably uniform amount of gold per ton pays better than the rock in which specks or veins of gold are occasionally seen, besides being liable to go another way if seen clearly. The stamps and the cost of erection will have to become the first consideration of the shareholders and the board of directors. I am not quite sure what the stamps cost, but it is about 100*l*. per head. Six heads have already been erected, and the next object of the board is to put up another wheel and 12 heads of stamps, and to follow this up by as many stamps and corresponding wheels along the line of this stream as from time to time may be convenient and the funds of the company may permit for the further development of the mine. The stream does not run by the mouths of all these levels, but the stone it sent downwards through shoots to the bottom or lower part of the hill, where the wheel is at work, and as other wheels will be erected the labour of the mine will be economised by the captain there. I am myself fully convinced, as far as any unsolved problem can possibly be conclusive, that in this mine we have one of no ordinary character. However, I wish to say nothing more in that direction, for I have a great dislike to any picture of the kind which becomes overpainted. (Hear, hear.) I have a great objection to make deductions from speeches made and assertions unsupported. However, I feel the fullest confidence in Capt. Goyen and his son, who is a man of mature age, and has had a practical education under a practical father; whose long lifetime is a sufficient guarantee of his excellence as a miner, and the way he has set out these works is a sufficient guarantee that he knows the way to get the gold where it exists. (Hear, hear.) Mr. Stenson also mentioned that a gentleman who came to the office to take 50 shares, when he found that Capt. Goyen was connected with the company at once applied for 500 shares. (Hear, hear.)

Mr. I. R. BINDLEY, after referring to the greatly improved prospects of the Frontino and Bolivia Company, and the fact that the shares of the company had risen 100 per cent., expressed his confidence in the management of this mine, and said he hoped the shareholders would try and induce their friends to take up some of the unallotted shares.

Major FORTESCUE thought that the money already sent over to the mine would produce such satisfactory results that there would be no difficulty in raising money in the future if it should be required.

Mr. BINDLEY said he thought the observation made by Major Fortescue was a perfectly correct one.

Capt. GOYEN believed the mine would speak for itself in the course of the next three or four months.

The CHAIRMAN said one of the directors had just made his colleagues an offer which they would take into consideration of giving the company his sole services as managing director, and would if necessary go out to the mine after Christmas. If they could afford to accept these services no doubt they would be a great benefit to the company.

Mr. GARNETT proposed a vote of thanks to the directors, and of confidence in their direction of the affairs of the company.

Mr. STEPHENSON seconded the motion, which was carried.

On the motion of Mr. STENSON, seconded by Mr. STEPHENSON, a vote a thanks was passed to the Chairman.

The meeting then terminated.

## CHONTALES COMPANY.

The statutory general meeting of shareholders was held at the offices of the company, Gresham House, Old Broad-street, on Wednesday, The Right Hon. the Earl NELSON in the chair.

Mr. J. JAMESON TRURAN (the secretary) read the notice convening the meeting.

The CHAIRMAN said this was a meeting which they were obliged to hold under the Act of Parliament, and this was why the shareholders had been called together, otherwise it would have been put off until the regular date of the half-yearly meetings of the old company. From this time, however, they would be able to date their half-yearly meetings, and there would be no necessity to have one in November. He was very glad to have this opportunity of stating to the shareholders what had happened to the new company. He considered that its formation had been attended with very great success, for out of 125,000 shares that would have been taken up if all the shareholders in the old company had applied for their proportion 91,252 had actually been taken up on the first application—that was to say, without any pressure having been put upon the shareholders. The directors now intended to issue a circular for the first time to endeavour to induce those shareholders who had not applied for any shares to do so. There was no actual fixed time when the shareholders might come to a decision, he believed; but it was necessary that some pressure should be put upon them, so that the directors might know whether those who had not yet come in intended to do so or not. The circular would be prefaced by a statement of a number of shares actually taken up at the date of its issue. The Chairman then read the terms of the circular which it is proposed to issue, and then said that the other statement which he had to make to the shareholders was, he thought, also of a satisfactory character. They were pledged to take action as soon as they possibly could, with the view of getting a good man to go out to report upon the mine generally, and upon the reduction works at the mine, and the directors promised that they would not make the first call until they had obtained a report from some person of position. He thought they had been very fortunate indeed in the gentleman they had met with—Mr. Bell Davis. This gentleman had been so highly recommended to them that although he required quite as much as the directors had stated the inspection would cost—and they could not obtain Mr. Bell Davis's services immediately—they had without hesitation made an engagement with him, as they believed he was essentially the man for them to have. They were very much impressed with this gentleman, and the recommendations that he brought were really first rate. Mr. Davies went out in August, but had first gone to Brazil to see another mine, which would take him a certain time, probably not more than a fortnight; but as there would be some difficulty in getting from Brazil to their mines, it was probable that he would not reach Chontales until November. If that were the case they would certainly expect to have some report from him by January, or, at all events, before the half-yearly meeting, which would take place about March. There was no doubt, if all went well, that when they met again they would have ample information to lay before the shareholders. In the meanwhile Mr. Bell Davis requested that a reduction officer whom he had employed, and who was a thoroughly practical man, should go out to the mines previously to his arrival there. This officer went out by the last mail, so that by the time Mr. Bell Davis arrived there he would have had a month's experience of the reduction works, and be able to give Mr. Bell Davis all the information that he might wish to receive. This officer, at Mr. Bell Davis's particular request, took out a small machine which might be of great importance to the company. It was a slime machine for collecting and dealing with the slime, so that the gold should not escape in the treatment. The directors, in the course of a very satisfactory interview with Mr. Bell Davis, explained the sort of things upon which they wished him to report, and they had by the last mail sent out a letter of directions, which Mr. Bell Davis would receive on his arrival at the mines. All the arrangements had been made in a satisfactory way, so as not to interfere with their regular agent, Mr. White. The shareholders would, of course, have seen and lamented with the directors the accident which happened to one of their wheels. Just at the time Mr. White was writing his letter stating that as he was making the first success with the wet season the wheel gave way in consequence of the extra pressure, and all that could be made out was that there was a flaw in the wheel, which had been completely hidden by the grease and stuff that had to be used. The wheel was erected under the superintendence of a former manager, and it was supposed that in fixing it it had been dealt with roughly, and it had been forced in so as to make it crack. No blame was attached to Mr. White, who worked most energetically It certainly spoke well for Mr. White's power over the natives, and the general good feeling which existed amongst the men, that they worked all night and day till some of them broke down, and then they worked from early daylight till night, and they did all they could to remedy the accident. The accounts from the mines now were so far satisfactory. He believed the stuff they had had to deal with had been very hard. They would have been pleased if more ore had been treated, and they had directed the attention not only of Mr. White but of Mr. Bell Davis to the fact. The quantity treated last month was 1060 tons, and it had brought in more than 5 dwts. to the ton, which was one of the largest yields they had had from the Estrella Mine. The general report was, he thought, very satisfactory, and from it they had been enabled to send out the latest directions to Mr. Bell Davis. He thought he had nothing more to say, as the directors do not go out of office till the second annual meeting, but he would be very happy to answer any questions.

Mr. BAXTER, in reply to a SHAREHOLDER, stated that the shareholders in the old company who did not come in by the date which would be fixed would have no *locus standi*. At present they had the right of applying for the shares, and the directors hoped that all would be taken up.

The SECRETARY, in reply to a question, said the holders of about 2000 shares in the old company had renounced, and as the liquidator he had sold those shares, on behalf of the shareholders, at 1s. 9d. per share. The new company had at the present moment no shares which they could distribute gratis.

The CHAIRMAN, in the course of some further conversation, said the reduction officer would probably remain at the mine. Mr. Bell Davis would stay there as long as necessary, and he had promised to write to the board once or twice before sending his general report. They were now working at a profit, and they would have done so in the previous month but for the accident to which he had referred. He also mentioned that Mr. Bell Davis had been highly recommended by Messrs. John Taylor and Sons, and other well-known firms.

The meeting then closed with a vote of thanks to the Chairman and directors.

## ANGLO-AMERICAN AGRICULTURAL COMPANY.

A preliminary meeting convened by the Anglo-American Company (Limited) was held at the Cannon-street Hotel on Thursday, for the purpose of explaining the advantages which the Western States of America offered to intending emigrants for forming home settlements, and the operations of the company in connection therewith. Mr. Alderman Hadley, who was to have occupied the chair, sent a telegram stating that he was detained in Manchester.

Mr. CLAPP, the manager of the company, then took the chair, and in alluding to the primary constitution of the company, said its capital was 1,000,000*l*., in shares of 5*l*. each, which would be represented by 5 acres of the best freehold land, which would, of course, greatly increase in value by settlement: 200,000 acres of the cheapest and best land in Central and Southern Kansas were to be taken over, to be devoted to operations in stock-raising, grain-growing, &c. It was to be laid out in farms of 160 acres and upwards. There were 1000 improved freehold farms in the finest regions for stock-raising and grain-farming, which would be stocked and fitted with every requisite and necessary buildings, and handed over to the purchaser immediately upon a partial payment being made, and the remainder would remain payable by easy instalments, to be made from the produce of the rich lands. Another feature of the scheme was to train a limited number of agricultural cadets, who would be received and given a thorough knowledge of high-class farming. At the end of a term of two years the company would turn over to each cadet investing 100*l*. an improved freehold farm of 480 acres, fully equipped and stocked, thus giving an admirable start in life to young men fond of agricultural pursuits. There was easy access to railway communication, so that there was every facility for sending the produce to market. The great natural advantages as to climate, fertility of soil, &c., and the great progress made in developing them, had been upon many occasions, recently touched upon by some of the English papers, and there were reports of visiting or pioneer parties amply verifyng every statement which the company put forward. He then stated, in reply to a question, that it was the intention of the company to furnish all emigrants with improvements, but not outfits or personal or household expenses. The man would be put in possession with all the necessaries for practical operations in agriculture, including farm, cattle sheds, and take from him partial payment at the commencement.

Sir JOHN BENNETT stated that he had been requested by Mr. Hadley to attend, and was unanimously voted to the chair. After some preliminary remarks, he said undoubtedly the great point for discussion was that of emigration, especially when they were told, as he had been, that the English agriculturist was completely wiped out of the field. Last year 60,000 emigrants landed in New York in one month, and that number was likely to increase. Having alluded to the large quantity of meat and corn sent to this country by Montreal and other colonies, in vessels specially constructed for the purpose, he said there was nothing left for the agriculturist but to emigrate, as he could not remain here

with the starvation wages of 12s. or 13s. a week, which was the ruling sum in his neighbourhood, Battle.——A VOICE: I can get them for 9s.

Sir JOHN said he did not care whether it was 9s. or 12s.; it was impossible to live and bring up a family on such a sum. It was just the same with the farmer. No farmer in this country could be sure of a tolerable living with the enormous taxes he had to pay. He could go into any country and get a farm for three years rent free.

Dr. W. J. HARRIS, Col. F. T. LEDERBERGER, the Hon. Mr. BRANSCOMBE (late U.S. Consul at Manchester), and other gentleman, bore testimony to the fertility of the soil of the Western States of America; and after considerable discussion, at the suggestion of the Chairman, the discussion was adjourned to some future period.——A vote of thanks to the Chairman and Mr. Clapp terminated the proceedings.

## TANKERVILLE MINING COMPANY.

An extraordinary general meeting of shareholders was held at the offices of the company, Austinfriars, for the purpose of passing certain resolutions relative to the winding up and reconstitution of the company. The chair was occupied by Mr. PETER WATSON. The notice calling the meeting was read by Mr. J. H. MURCHISON, the London manager and secretary.

The CHAIRMAN: Gentlemen, you will not expect from me a long attention on the present occasion, because this matter was thoroughly gone into and sifted at the meeting of shareholders which was held on Aug. 31, in a discussion which lasted some hours. The result of that meeting you have had in a pamphlet which has been sent to each shareholder. In a report which was published in the newspapers there was a little clerical error; the word "debentures" was used—that was a misprint; it should be "debit." We have no debentures. Further on in the same report it is stated that Roman Gravels alone was selling for 250,000*l.*; that, you will find, was corrected in the pamphlet which was sent to you, so as to read that Roman Gravels was selling "for 120,000*l.*," and so on. That error, as I have said, has been corrected in the pamphlet which you have all got. The object of our meeting to-day is, as you will see by the notice, to pass certain resolutions. I have nothing further to say on the present occasion, but I may have something to say on the next occasion, and on future occasions, with respect to the great value of this property. Before the resolutions are put I should mention that at the present time the liabilities amount altogether to 4647*l.* 1s. 1d., and we have cash at the Alliance Bank, and for ore 846*l.* 19s. 2d., so really we are in debt about 3800*l.* 1s. 11d.

Mr. J. H. MURCHISON: That takes in all the costs; there may be ore against that to a certain extent.

The CHAIRMAN: There may be. I will call upon some shareholders to move the first resolution.

Mr. THOMAS WILSON moved the first resolution, as follows:—"That it has been proved to the satisfaction of this meeting that the company cannot, by reason of its liabilities, continue its business, and that it is advisable to wind-up the same." He should like to know whether the directors had had many offers of support towards this amalgamation?

The CHAIRMAN: We have a very large number of proxies here, and other shareholders, who are out of town, have communicated with me that they fully endorse it, and agree to it in its entirety, and that it is the best thing that could possibly be carried out. Not only for local shareholders, but for all parts of the country, the opinion reaches us that it is the finest thing which can be done.

Mr. THOMAS WILSON: Is there much dissension on the other hand?

The CHAIRMAN: There is one shareholder who does not exactly fall in with it, but he does not oppose it. (Hear, hear.)

Mr. WILSON asked whether the three mines were close to each other?

The CHAIRMAN said the three mines were one extensive run of mines.

Mr. WILSON asked whether the machinery which had been on the mines had been there many years?

The CHAIRMAN: Some portion has been there for some years, and the other comparatively recently obtained.

Mr. WILSON: Would it not be expensive to resuscitate the machinery and set it going?—The CHAIRMAN: In Pennerley if you light a fire you can set to work at once and go on working. (Hear, hear.)

Mr. CAFFERY said he would second the resolution.

Mr. HARROWAY, who said he was not present at the last meeting, asked whether the new company would have leases for the Bog and Pennerley Mines, and if so what were the terms of the lease, and what would be the amount of royalty which the new company would have to pay? In estimating the probable success of Bog the price of lead had been taken at 12*l.* per ton, whereas the price obtained for lead at Tankerville for the last 12 months had been 13*l.* 2s. 2d. He was rather inclined to think the best thing for the shareholders to do would be to confine themselves to Tankerville, and to raise 10,000*l.* or 12,000*l.* to pay the debts and carry the mine on.

The CHAIRMAN said the shareholders at the last meeting had unanimously decided on the course which they were now met to carry out, and he might mention that although the directors had large numbers of proxies at the last meeting they declined to use them, preferring that the question should be settled by the general body of shareholders after the fullest discussion. (Hear, hear.) As regarded the 12*l.* per ton, which was the estimate taken by Capt. Waters, no doubt that estimate had been taken as a fair average price, and he believed the time was not far distant when that price would be obtained. (Hear, hear.) The mines had been worked extensively, and were the largest lead mines in that part of England, or even in Wales, but where the money had been absorbed was in the purchasing and erection of the extensive machinery. When the Bog people commenced operations there was a large engine to erect, and an enormous amount of pitwork to be done. There were eight or nine engines on those two mines, which, with the other large works, must have taken an enormous amount of capital. At Pennerley the old company had only sunk a short distance, and there was as good lead as ever at the bottom of the mine. He himself was in a rather delicate position, and did not want to preach too much, but he might say that he had for a long time seen the great value of the Bog and Pennerley Mines, irrespective of whether the Tankerville took them or not. (Hear, hear.) The shareholders at the last meeting would remember that he had almost drawn back from the proposition that the Bog and Pennerley should be united with Tankerville, because he had not the slightest wish to in any way seem to force those two properties upon the Tankerville shareholders, because he was perfectly convinced that he could get a much larger sum for them than he was going to receive under the present arrangement. As regarded leases he need scarcely say that if he should have handed over leases he should have demanded a much higher price; but he had only bought the plant and machinery, and those he handed over to the Tankerville Company on the conditions stated. There was no doubt when these three mines were all resuscitated and fully at work they would form one of the largest and most important undertakings of the kind in the kingdom. There was no other mine which he was aware of possessed such valuable lodes. In the neighbourhood was the celebrated Snailbeach, which had paid dividends for over 100 years, and close at hand was also the Roman Gravels, which he and a gentlemen in the room were instrumental in placing in its present excellent position. All this augured well for the success of the new company when it got to work. He might mention that in the Bog there was plenty of excellent blende. Looking at all the circumstances he thought that everything promised well for the future prosperity of the amalgamated companies.

Mr. HARROWAY said he did not ask the question relative to the lease in any hostile spirit, but simply that the shareholders might not find themselves afterwards thrown over with regard to the leases.

The CHAIRMAN said there was no fear of that. (Hear, hear.)

The CHAIRMAN, in reply to an observation of Mr. WEDEKIN, said that he had in his possession many independent reports relative to the value of the Bog and Pennerley. One gentleman (a man of great experience in mining matters) wrote—"I have on several occasions been employed professionally to inspect the same mines named, and I am prepared to say that their being united and under one control is by far the best to work them successfully, and I cannot see how under such conditions they can fail of becoming a large dividend-paying concern." (Cheers.) He had many other reports, all of a similar character, and in all probability he should shortly make extracts from these, and have them printed and sent to the shareholders. As regarded the leases, he could only say he had been in negociation on that point, and as far as they had gone those negociations had resulted satisfactorily. (Cheers.)

The first resolution was then put to the meeting, and carried unanimously.

Mr. H. WEDEKIN then moved—"That the company be wound up voluntarily."

Mr. P. CAFFERY seconded the resolution, which was put and carried unanimously.

The CHAIRMAN said the next business was to elect liquidators. It was suggested that the two gentlemen to be appointed should be Mr. J. H. Murchison, the London manager, who possessed an intimate knowledge of the company's affairs, and Mr. Henry Jervis Alfred, a large shareholder, of Moorgate-street, who had taken a great interest in the affairs of the company, and was well acquainted with mining.

On the motion of Mr. WILSON, seconded by Mr. W. H. HARROWAY, Mr. J. H. Murchison and Mr. Henry Jervis Alfred, were then appointed liquidators, and their remuneration fixed at 50 guineas each.

On the motion of Mr. J. J. HODGSON, seconded by Mr. W. J. SUTTON, the following resolution was also passed unanimously:—

"To authorise the liquidators to transfer the property and business of the Tankerville Mining Company (Limited) to another company formed for the purchasing and working the plant and machinery of the Tankerville, Bog, and Pennerley Mines, with a capital of not less than 110,000*l.*, consisting of 110,000 shares of 1*l.* each, of which 36,000 shares shall be offered for subscription in the first instance to the shareholders in the Tankerville Mining Company (Limited): 26,000 shall be allotted fully paid up as a bonus, share for share, to the persons who subscribe for and pay the sum of 1*l.* per share in the first-named 26,000 shares, and in consideration of their so doing 36,000 shares shall be allotted fully paid up among the shareholders of this company, in the proportion of three shares for one, according to their holding in the Tankerville Mining Company (Limited), as part of the consideration for the transfer of the property and business of the Tankerville Mining Company (Limited) being made to the said new company, and on the said new company taking upon itself the payment of the debts and liabilities of the Tankerville Mining Company (Limited), together with the expense of winding up the same, 1000 shares shall be allotted fully paid up, and applied in part payment of the purchase money of plant and machinery in the Bog and Pennerley Mines: 1000 shares shall be allotted fully paid up, and applied towards the expenses of and incidental to the formation of the said new company, and that the liquidaior or liquidators be authorised to make such sale or transfer, and enter into such arrangements for carrying out the above, or such modifications thereof, as may appear necessary. And that the liquidators have full power to continue the works at the mine pending the carrying out and completing the above arrangements, and pay the costs occasioned thereby out of the funds of the company, the amount so paid to be repaid to the liquidators by the new company, making 110,000 shares."

The CHAIRMAN, in answer to a SHAREHOLDER, said that the name suggested for the new company was the Tankerville Great Consols Company (Limited), but the matter had not been definitely settled.

The CHAIRMAN, in reply to a further question, said that in the allotment of shares priority would be given to the existing shareholders. He congratulated the shareholders on the decision they had arrived at, and stated that those mines had in former years sold for the rate of 400,000*l.*, and he hoped to see the day when they would be of the same value again. (Cheers.)

A cordial vote of thanks to the Chairman for the care and pains he has bestowed on this business, and also to the directors for their valuable services, closed the proceedings.

## DEVON GREAT UNITED MINING COMPANY.

The statutory meeting of shareholders was held at the offices of the company, Austinfriars, on Wednesday. In the absence of Lord Claude Hamilton the chair was filled by Mr. PETER WATSON on the motion of Mr. S. York, seconded by Mr. Treherne.

The CHAIRMAN said: Gentlemen, I am happy to take the chair in the absence of Lord Claude Hamilton, who has acted as chairman. I have not much to say, and we have no report to make, because this, as you know, is the statutory meeting, held in accordance with the provisions of the Companies' Act, which requires that a meeting shall be held within four months of the registration of a company. It is a remarkable coincidence that we meet here to-day on the fiftieth anniversary of the opening of the first railway—that between Manchester and Liverpool. There is no doubt this is a wonderful nation, and this will be especially apparent in the magnitude of its mineral resources, which have been developed more particularly during the last half century. It is remarkable that this state of things has been largely brought about by the railways, which during the past 50 years have been laid in all directions throughout the country. There are gentlemen present who remember the time 50 years ago to which I refer, and also remember how they had to travel by the old coaches, and now we can travel in one day a distance which it took our fathers almost a week to accomplish. Then with regard to operations, we have all seen the enormous strides which have taken place in the development, not only of our collieries but also of our lead, tin, and copper mines. When we come to look at the magnificent machinery which has been erected for mining purposes in Cornwall, Devonshire, Wales, the Isle of Man, Staffordshire, Shropshire, and even in Ireland and Scotland, and see the progress which has been made in the last 50 years, why should not we look forward to the same progress in the next 50 years as in the past. In 1845 a certain number of gentlemen subscribed 1000*l.* to purchase the Devon Great Consols property, and what was the result. They cleared out an old shaft in the mine, and within one year that 1000*l.* was selling at the rate of 800,000*l.* for investment. In the very first year they gave in dividends 45,000*l.*, in the second year 50,000*l.*, and in another year 65,000*l.*, and since that time, for the splendid copper lode revealed there, there has been enormous wealth obtained—millions sterling. And that brings me to this—that within a stone's throw from the very place where those riches were obtained we are beginning to develope a piece of ground where we believe there are lodes which are a continuation of those from which such enormous wealth has been obtained. Deven Great Consols, I am told, on the best authority, when I visited the mine on Saturday last, that an old shaft there has laid dormant from want of machinery to develope it, and has not been worked for 50 or 60 years. What we shall do is develope these various lodes which run into our sett from Devon Great Consols—the same lodes which have made the enormous wealth in Devon Great Consols for the last 45 years. These are now to be resuscitated and developed in the new property, and according to all the information which we have had laid before the shareholders, with a vigorous development, and by the aid of rock boring machinery, by which we shall do as much in a month as was hitherto possible in three or four months, I hope we shall soon be able to report that great and rapid progress has been made. After paying our first cost to Saturday last, we have 5300*l.* in hand. As long as the directors and myself and the agent and purser are connected with this property we mean to work this property energetically and bring it into a good dividend state. I am assured there is plenty of ore in the mine. I was told when I was at the mine that if the old management had had a trifle more money this mine, instead of lying idle for so long a time, would at the present time be giving a dividend to the shareholders. There is likely to be a very big mine here, and I am very pleased to think that we have some of our oldest shareholders of the Devon Great Consols become shareholders in the Devon United. There is no mine in Cornwall better situated, or on a better channel of ground, than this new property. You will like to hear what we have been doing. Hitherto we have pumped water out of the mine—coppery water—and this water has been very injurious indeed to the boilers, and corroded and ate them away, but we do not intend that state of things to go on. We want to make a new start. We have driven an adit level in order to enable us to bring water from the river and pump it into the reservoirs so as to get pure water for the boilers. We have driven this up 90 fms. from the river, which is a long distance to the engine-shaft, and we have put in 11 and 12-inch pipes. At the adit the shaft will be 13 fms. from the surface, so we have plenty of room to take in the pure water and pump out the old water. From what we have heard the rich south lode in the Devon Great Consols has never yet been got in the Devon Great United Mine. At the 60 fm. level we shall drive a cross-cut with the view of intersecting the lode, and we expect very good results from it. From this Devon United Mine, in past workings, they have raised and sold about 45,000*l.* worth of ore. There is plenty of ore there still, and from all accounts we have mundic as well. Some time since the arsenic soot was selling at from 3*l.* to 3*l.* 5s. per ton, and now about 6*l.* or 6*l.* 5s. per ton. We shall put our works in order, so as to go hard to work and make the arsenic soot. All the boilers have been properly repaired, and one boiler is finished and will soon be put in its place. It is intended that this engine shall start on Oct. 6, and I am desired by the direciors to invite you, gentlemen, and all those shareholders who are not present, to be present at the mine and see the engine start; and not only the shareholders of the Devon United, but we shall also be pleased to see present the shareholders of the Devon Great Consols, many of whom are also shareholders in the Devon United. The mine is about three miles from Tavistock, and the journey to Plymouth is an easy one, and anyone desiring to do so can return next day. It is the wish of the directors, and the manager and purser of the mine, to see as many shareholders of the two companies present as possible. (Hear, hear.) I have this morning received a short report from the manager, which I will read:—

*Sept.* 14: The manager, Capt. Isaac Richards, reported to you on the 19th ult. that we were doing certain necessary work for bringing in a constant supply of pure water for condensing purposes and general use in the boilers, and elsewhere in the mines; and we are pleased to state that this work (as you saw when you visited the mines on Saturday last) is proceeding in a very satisfactory manner indeed. It should be understood that during the last working the water, as pumped from the mines, was used for boiler feed and condensing; and owing to the quantity of acid it contained it gave considerable trouble, and caused expense in repairs to boilers and well-work of the engines; and after duly considering the matter, we decided that the only proper course to pursue was to bring in the pure water, which we are now doing, and of which we can get a constant supply. We are making every effort to complete the necessary repairs to boilers, &c., so as to start the engine, and this we purpose doing, if convenient to you and your directors, on Oct. 1, on which day we hope as many of our shareholders as can possibly attend will be present; at the same time we should also be glad to see any of the Devon Consols shareholders who have not taken an interest with us here. We do not deem it at all necessary to repeat our opinions of the mine, as nothing has occurred to change them, and we consider that this is second to but few as a mining property.—MOSES BAWDEN, ISAAC RICHARDS, WILLIAM CLEMO.

In conclusion he (the Chairman) said that all the leases and papers were in proper order, and expressed his hope that when he has the pleasure of meeting the shareholders in November next he should be able to lay before them a satisfactory account of the progress made in the development of the mine. (Cheers.)

Mr. WILSON having expressed the pleasure with which he had listened to the remarks of the Chairman, and having congratulated the meeting on the bright prospects of the undertaking, asked whether more than the number of shares had been applied for than the directors had had to allot?——The CHAIRMAN said the number of shares to be allotted was 12,000, and no less than 16,000 shares were applied for. (Cheers.)

A vote of thanks to the Chairman and directors closed the proceedings.

## TINCROFT MINING COMPANY.

The general meeting was held at the mine on Sept. 9, Capt. W. TEAGUE in the chair.

The statement of accounts, showing a profit on the 16 weeks' working of 814*l.* 19s. 3d., and reducing the debit balance to 2036*l.* 18s. 6d., was submitted, and the agents' report was read.

The CHAIRMAN said they had calculated to have holed Martin's shaft much easier than they had done, but they had met with more water than was anticipated. Now this had been effected they would have more assistance from that part of the mine than formerly. They had not derived much benefit from there during the past four months, or if they had they would have stood much better that day. They had completed the sinking of the downright shaft to the 282. They had some hard ground in that part of the mine, and they wanted to make a communication as quickly as possible with the engine-shaft, and also extend their levels west. They had been a long while talking about having boring machinery, but up to the present time they had not seen their way to erecting it themselves. Provision had been made, as far as a boiler was concerned, for working a boring-machine, whether set by contract or on their own account. That morning he had seen Mr. Harris, the representative of the Champion Boring Machine Company, and he had promised to see him (the Chairman) in regard to a contract on Saturday morning. They proposed to set two levels—the 282 west and the 236 east—so as to communicate with their engine-shaft. Mr. Harris rather objected to laying down pipes for the boring-machine, and he (the Chairman) thought that there was some reason in it. He thought if mines would not run some little risk that they could hardly expect strangers to do everything for them. One of Mr. Harris's stipulations was that the mine should lay down the pipes, and he (the Chairman) dare say they could lay them down cheaper than the contractor could. It was not always advisable that contractors should have the laying down of pipes, because there was a permanency about them, and it would be better to have them put down at the cost of the mine. He thought they ought to lay themselves out for the permanent working of the mine by machinery. Boring machinery, he was of opinion, must of necessity be used in future in all well-regulated mines. He would not say for a moment but that we should have improvements in the best boring machines now in use, as they were capable of improvement, but it would be worth their while to throw away the old ones when better ones were produced. He must, therefore, ask them to authorise him to enter into a contract with Mr. Harris, of the Champion Company, to drive the two levels previously mentioned. When that was accomplished he thought they ought to expect very much better results—in fact he felt confident in his mind that such would be the case.

Capt. W. THOMAS, of New Cook's Kitchen Mine, remarked that the Champion Boring Machine Company had driven the ground in that mine three times as fast as it could be done by hand labour, and at the same price as hand labour.

It was then resolved, upon the proposition of Mr. F. W. DABB, seconded by Capt. W. Thomas, that Capt. Teague be requested to enter into a contract with Mr. Harris, the representative of the Champion Boring Company, for the driving of the 282 west from the Downright shaft, and the 236 east of shaft, on the best terms he can on behalf of the adventurers.

The CHAIRMAN, referring to the prospects of tin, said that he hoped they would soon have a change, but they did not want their ears tickled with suggestions about higher prices when there was no probability of them being realised, as it did not suit their pockets. He did not see anything to alter his opinion in regard to the price of tin. Higher prices were in store for them, but they would have to wait. They must have prices at a little over 50*l.* a ton in order to go on smoothly and nicely, and as sure as they were there that time would arrive. The quantity of tin raised now in Cornwall was not as large as it was two years ago, and he questioned whether all the new mines that were being set to work would enable them to maintain the present returns: He did not say it would not, but the quantity of tin raised, even if they had 130*l.* a ton, would not materially increase.——The proceedings then terminated.

## ST. JUST UNITED MINING COMPANY.

A general meeting of shareholders was held at the mine on Sept. 10, Mr. R. BOYNS in the chair.

The statement of accounts for 18 months showing a debit balance of 1848*l.* 16s. 4d. was submitted, and the agents' report was read. After reporting upon the various points of operation, Capt. James Bennetts and Charles Clemens said:—"The New Lode was discovered at the surface when engaged removing ground at our dressing-floors, which produced some good tin-stuff; we are driving on a branch at the deep adit to intersect it; it has a kindly appearance, and in all probability will be found highly productive. In conclusion, we beg to say that the mine is in a thorough state of working, and we found the underground prospects much the same as we expected."

The CHAIRMAN said that the accounts were brought up as closely as possible, the pay of the previous Saturday being charged. In reply to an adventurer, he stated that the compressed powder answers, according to their own agent's report and those all through the parish, a great deal better than the other powder, and is very much cheaper and safer. He further added, having read the accounts, that it was estimated that they could fork the mine and get into their present position for 5000*l.*, but this had cost nearly 7000*l.* When the estimate was made it was in the time of the depression, when he bought the engine for 150*l.*, which he could not now put in for 1150*l.*, and when he bought pumps at 2s. 6d. per 100, for which they had now to give 5s. 6d. They found in clearing up the mine that it was in a worse state than they could possibly have expected. The whole of the mine now was in thorough working order, and they had thought it best to put the mine in a proper state at once, and since the captains had asked him to charge everything in the accounts and not make a call, he thought they must have some confidence that the captains had confidence in the mine.

Capt. BENNETTS said that they should continue keeping their stamps going, and looking at the prospects of the mine he thought they might defer making any call. Parties who knew the mine told him when they started that when they had forked the mine to the 62 they would find pumps to the bottom, and a double skip-road, and when they got to that level they found the pumps and the skip-road, but they did not think they were good enough for them. Had the former workers of the mine had good pitwork they would not have given it up, because nobody who had any knowledge of mining would have abandoned a mine of that quality if they had been enabled to keep the water clear at the same cost as they were now doing. They had found their shaft weaker than they expected, but they begun right, and at the present time they were right. There was one consolation than when they got to the bottom they found their underground prospects quite equal to what they expected. They might have forked the mine sooner than they did had they not had to attend to the shaft, but they forked over 40,000,000 gals. of water. For this purpose they adopted a new bucket which they sent to the Polytechnic, and which took a bronze medal. Their new 24-in. winding-engine, he would not hesitate to say, was equal to any in England. The Sholl's stamps had given great satisfaction, but it was not yet giving its full number of strokes. When they got its full speed he believed it would equal their expectation, and when it was working at 140 to 150 strokes a minute they would have quite enough stuff to keep the engine at its full speed.

The usual complimentary votes terminated the proceedings.

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BRAZIL.—A correspondent of the Times, writing from Rio Janeiro, says:—Those wonders of the gold and diamond fields of Minas Geraes, which yielded so many millions during the last century, and part of the present, which "enabled an extravagant governor at Ouro Preto to shoe his horses with gold in solemn religious processions," which "enriched the reigning dynasty with 3,000,000*l.* worth of diamonds, and set on the Portuguese and Brazilian diadems those two famous jewels, the Southern Star and the Abacete, rivalling the glories of the Koh-i-noor," are in a great measure things of the past. Hardly 1000 men are now at work in those diggings which formerly employed 80,000, and the outcome of their labours does not go for much among the items of the Budget. A few foreign companies, chiefly English, however, have taken up the abandoned shafts, and are now working the mines of Morro Velho, Pary, and other localities, from which they extract gold to the yearly amount of 280,000*l.* to 300,000*l.*

NEWFOUNDLAND.—A correspondent of the Times, writing from Halifax, says:—One matter of Imperial interest is apparently about to be settled in a way by which the enterprising citizens of the United States will profit. Though the resident merchants care little for mines, the mines of Newfoundland are becoming very valuable. Mr. Ellershausen, from Nova Scotia, has recently developed some copper mines, and he has, in the brief space of five years, raised Newfoundland to the rank of the sixth copper-producing country in the world. I was informed that he had disposed of his properties for a very large sum to capitalists from the United States. Lead mines have also been discovered and worked: it has been proved that there is a mine of nickel in the island. There is good reason for believing that gold and coal will yet be found there in abundance. A moderate amount of capital judiciously invested in developing the resources of the island could hardly be better employed. The exports at present are chiefly confined to fish and minerals.

RAILWAY SPEED IN AMERICA.—The rate of travelling on some of the railways in the United States is very little inferior to the speed attained on English lines. A train was recently run from Jersey City to West Philadephia, a distance of 90 miles, in 93 minutes, which included four stoppages and a slackening of the train at two different points. The number of stations between the two cities is 54, and the slowest train of the day, stopping at all these stations, completes the whole distance at the rate of 45 miles an hour, while two of the afternoon trains regularly make over 48 miles an hour.

PORTABLE ROCK-BORING APPARATUS.—The principal object of the invention of Mr. S. STRINGER, of Manchester, is to construct a portable apparatus for boring holes in rocks for blasting, but it may also be used for getting coal. The boring is effected by abrasion and pressure, and not by percussion as usual. The apparatus is suspended in a wooden framework by means of a strong cotter passed through a bolt hole, so that it can be either used in a horizontal or oblique position or tilted upwards or downwards. The wooden famework is secured in front of the rock (or other material to be bored) by screws, spikes, or wedges, or in any other convenient manner. The apparatus consists of a wrought-iron frame, the front part of which is fitted with a screw nut through which passes a long rod with a fine threaded screw. One end or this rod is provided with a socket to carry the drill or boring tool. The screw nut is held in its place by means of two cotters. The other end of the rod is squared and may have fixed on it a handle for turning the boring rod direct when the material is comparatively soft, or it may be provided with a spur wheel in gear with a similar pinion, to the axis of which the handle is fixed in order to gain more power when boring into harder substances. The frame of the apparatus is also connected to the wooden framing by means of two chains (one above and one below), by means of which also it is held in the horizontal or inclined position required. The tool which he prefers to use is a wormed screw drill which will clear out the borings. It will be evident that this apparatus being fixed in front of a rock or other substance to be bored or drilled, upon turning the handle the tool will be turned, and at the same time will be forced slowly forward by means of the fine threaded screw.

PARIS EXHIBITION, 1878.

GOLD AND SILVER MEDALS AWARDED for Steam-Engines & Boilers, also the Special Steam Pump, and Compound Pumping Engine.

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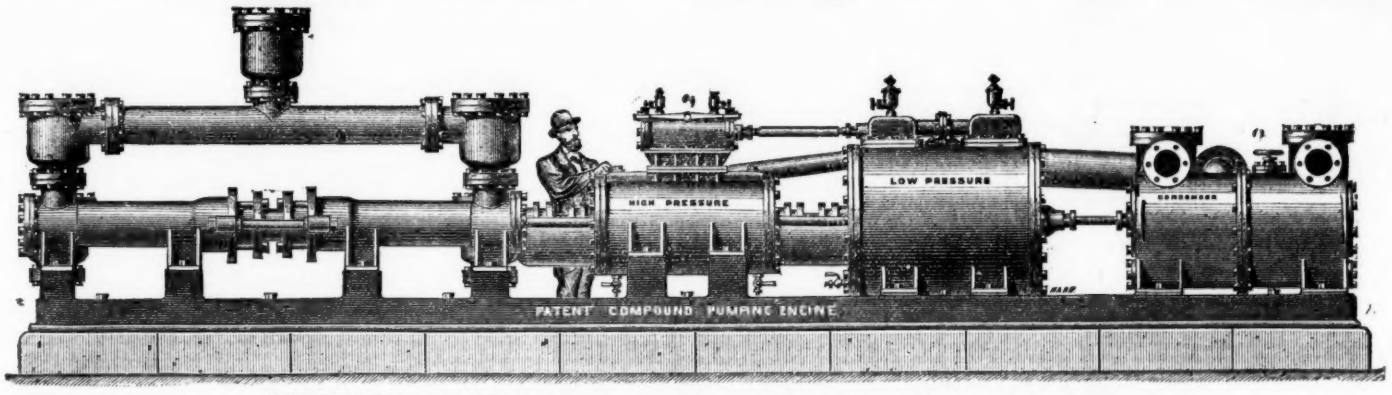
## TANGYE'S DIRECT-ACTING
# COMPOUND PUMPING ENGINE,

For use in Mines, Water Works, Sewage Works,

## And all purposes where Economy of Fuel is essential.

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TANGYE'S COMPOUND PUMPING ENGINE COMBINES SIMPLICITY, CERTAINTY OF ACTION, GREAT ECONOMY IN WORKING, COMPACTNESS, AND MODERATE FIRST COST.

This Engine will be found the most simple and economical appliance for Mine Draining, Town Water Supply, and General Purposes of Pumping ever introduced, and as regards Mine Draining, the first cost is very moderate compared with the method of raising water from great depths by a series of 40 or 50 fm. lifts. No costly engine-houses or massive foundations, no repetition of plunger lifts, ponderous connecting rods, or complication of pitwork, are required, while they allow a clear shaft for hauling purposes. In this Engine the economical advantages resulting from the expansion and condensation of steam are very simply and effectively obtained. The steam after leaving the high-pressure cylinder is received into and expanded in the low-pressure cylinder, and is thus used twice over before being exhausted into the condenser or atmosphere.

The following first-class Testimonials will bear evidence as to the efficiency and economy of the Engine :—

## TESTIMONIALS OF TANGYE'S COMPOUND PUMPING ENGINE.

21" / 36 × 10" × 48" COMPOUND CONDENSING STEAM PUMPING ENGINE.

Newcastle and Gateshead Water Company, Newcastle-on-Tyne, Oct. 20, 1879.

Messrs. Tangye Brothers.

GENTLEMEN,—In reply to your enquiry as to the efficiency of the two pairs of Compound Condensing Engines recently erected by you for this company at our Gateshead Pumping Station, I have great pleasure in informing you that they have far surpassed my expectations, being capable of pumping 50 per cent. more water than the quantity contracted for; and by a series of experiments I find they work as economically as any other engine of the compound type, and will compare favourably with any other class of pumping engine. By the simplicity of their arrangement and superior workmanship they require very little attendance and repairs, and the pumps are quite noiseless. A short time ago I had them tried upon air by suddenly shutting off the column, and found they did not run away, thus showing the perfect controlling or governing power of the Floyd's Improved Steam-moved Reversing Vale. I will thank you to forward the other two pairs you have in hand for our Benwell Pumping Station.

Yours respectfully,
(Signed) JOHN R. FORSTER, Engineer.

21" / 36 × 12" × 48" DOUBLE RAM COMPOUND CONDENSING STEAM PUMPING ENGINES.

The Chesterfield and Boythorpe Colliery Company (Limited), Registered Office, Boythorpe, near Chesterfield, Oct. 1, 1879.

Messrs. Tangye Brothers. Supplied in January, 1878.

GENTLEMEN,—Referring to the above, which we have now had working continuously night and day for the last 12 months, we are glad to say that it is giving us every satisfaction. It is fixed about 400 feet below the surface, the steam being taken down to it at pressure of 45 lbs. per square inch. We can work the pump without any difficulty at 28 strokes per minute=224 ft. piston speed. The pumping power is enormous. The vacuum in the condenser being from 11½ to 13 lbs. The pump is easily started, and works well and regularly. The amount of steam taken being much less than we anticipated. We consider the economy in working very satisfactory indeed. The desire for power and economy at the present day will certainly bring this pump into great requisition.

Yours truly,
(Signed M. STRAW, Manager.

## SIZES AND PARTICULARS.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diameter of High-pressure Cylinder.....In. | | 8 | 8 | 8 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 14 | 14 | 14 | 14 |
| Ditto of Low-pressure Cylinder .....In. | | 14 | 14 | 14 | 18 | 18 | 18 | 18 | 21 | 21 | 21 | 21 | 24 | 24 | 24 | 24 |
| Ditto of Water Cylinder .....In. | | 4 | 5 | 6 | 5 | 6 | 7 | 8 | 6 | 7 | 8 | 10 | 7 | 8 | 10 | 12 |
| Length of stroke .....In. | | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 36 | 36 | 36 | 36 |
| Gallons per hour approximate ..... | | 3900 | 6100 | 8800 | 6100 | 8800 | 12,000 | 15,650 | 8,800 | 12,000 | 15,650 | 24,450 | 12,000 | 15,650 | 24,450 | 35,225 |
| Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder ..... | Non-condensing... | 360 | 330 | 160 | 360 | 250 | 184 | 140 | 360 | 264 | 202 | 130 | 360 | 275 | 175 | 122 |
| Ditto ditto | ditto—with Holman's Condenser... | 480 | 307 | 213 | 480 | 333 | 245 | 187 | 480 | 352 | 269 | 173 | 480 | 367 | 234 | 162 |
| Ditto ditto | ditto—with Air-pump Condenser... | 600 | 384 | 267 | 600 | 417 | 306 | 335 | 600 | 440 | 337 | 216 | 600 | 459 | 203 | 203 |

*CONTINUED.*

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diameter of High-pressure Cylinder .....In. | | 16 | 16 | 16 | 16 | 18 | 18 | 18 | 18 | 21 | 21 | 21 | 24 | 24 | 24 | 30 | 30 |
| Ditto of Low-pressure Cylinder .....In. | | 28 | 28 | 28 | 28 | 32 | 32 | 32 | 32 | 36 | 36 | 36 | 42 | 42 | 42 | 52 | 52 |
| Ditto of Water Cylinder .....In. | | 8 | 10 | 12 | 14 | 8 | 10 | 12 | 14 | 10 | 12 | 14 | 10 | 12 | 14 | 12 | 14 |
| Length of stroke .....In. | | 36 | 36 | 36 | 36 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| Gallons per hour approximate ..... | | 15,650 | 24,450 | 35,225 | 47,950 | 13,650 | 24,450 | 35,225 | 47,950 | 24,450 | 35,225 | 47,950 | 24,450 | 35,225 | 47,050 | 35,225 | 47,950 |
| Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder ..... | Non-condensing.. | 360 | 230 | 160 | 118 | 456 | 292 | 202 | 149 | 397 | 276 | 202 | 518 | 360 | 264 | 562 | |
| Ditto ditto | ditto—with Holman's Condenser... | 480 | 307 | 213 | 154 | 603 | 389 | 269 | 198 | 528 | 363 | 269 | 691 | 480 | 352 | 750 | |
| Ditto ditto | ditto—with Air-pump Condenser... | 600 | 384 | 267 | 191 | 750 | 486 | 337 | 248 | 660 | 450 | 337 | 864 | 600 | 440 | 937 | |

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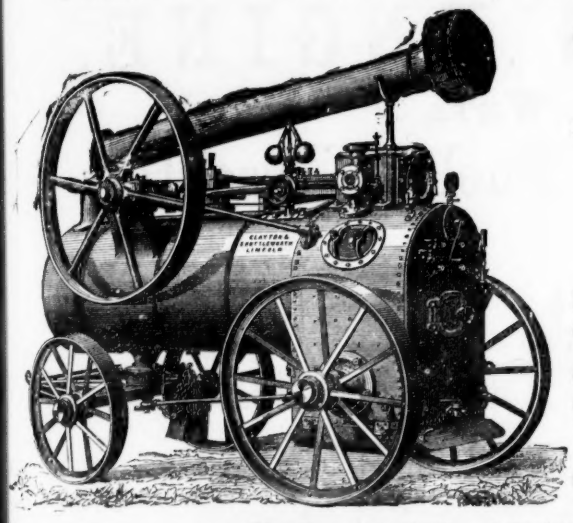

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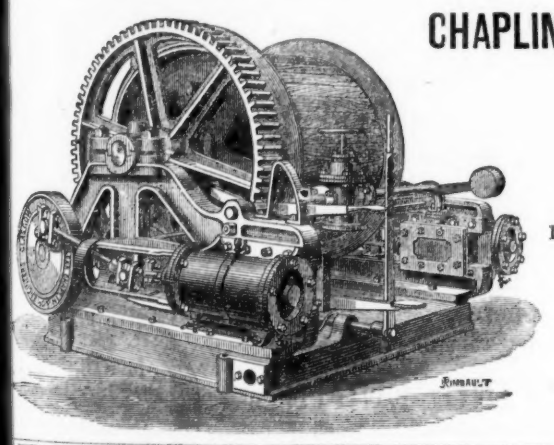

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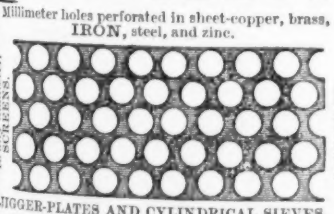

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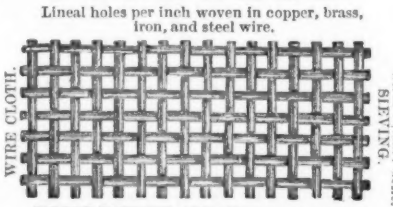

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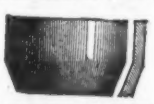

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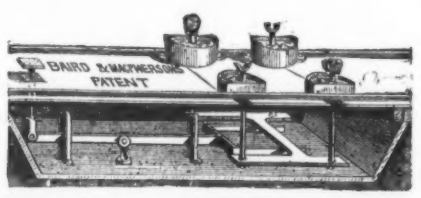


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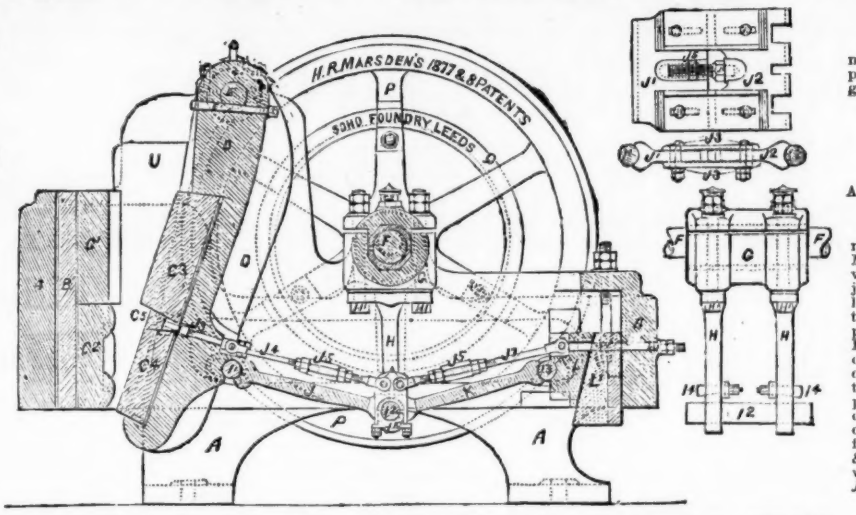


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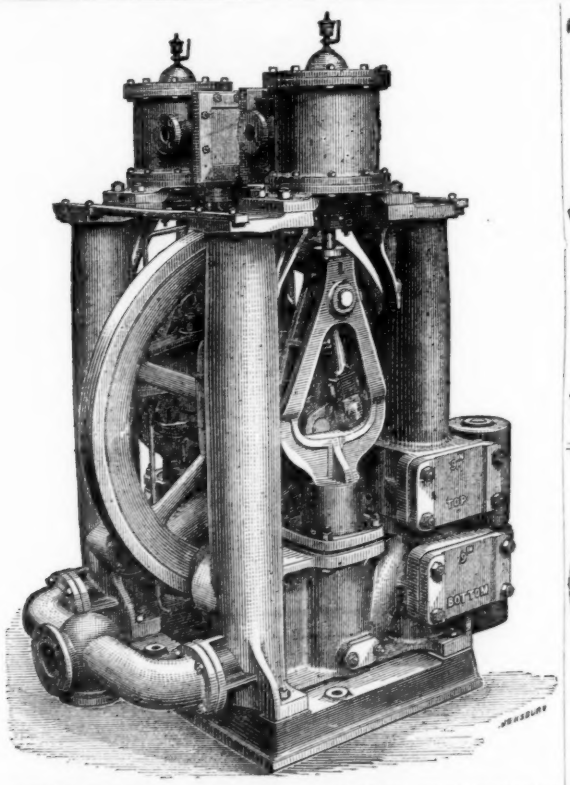

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